Advant® OCS
with Master software

Electrical Diagram Builder

Version 3.0/1

User's Guide

3BDS001708R0101

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Chapter 1 Introduction

1.1 Before You Begin

This manual describes the Electrical Diagram Builder. Electrical Diagram Builder is the basic tool for Computer Aided Electrical Engineering of the AdvaBuild Engineering Software. With this Builder you can create and edit electrical aspects to the Advant objects.

This book is not intended to be the sole source of instruction for engineering tools. Those people involved in system engineering should attend the applicable system engineering courses offered by ABB.

The reader of this book should have good knowledge about engineering in general and the work flow used in his project.

1.2 Equipment Requirements

For a description of the system requirements consult the Release Notes of AdvaBuild Engineering Workplace and the Release Notes of the Electrical Diagram Builder.

1.3 How to Use This Book

This book is organized into chapters and sections as shown in Figure 1-1.

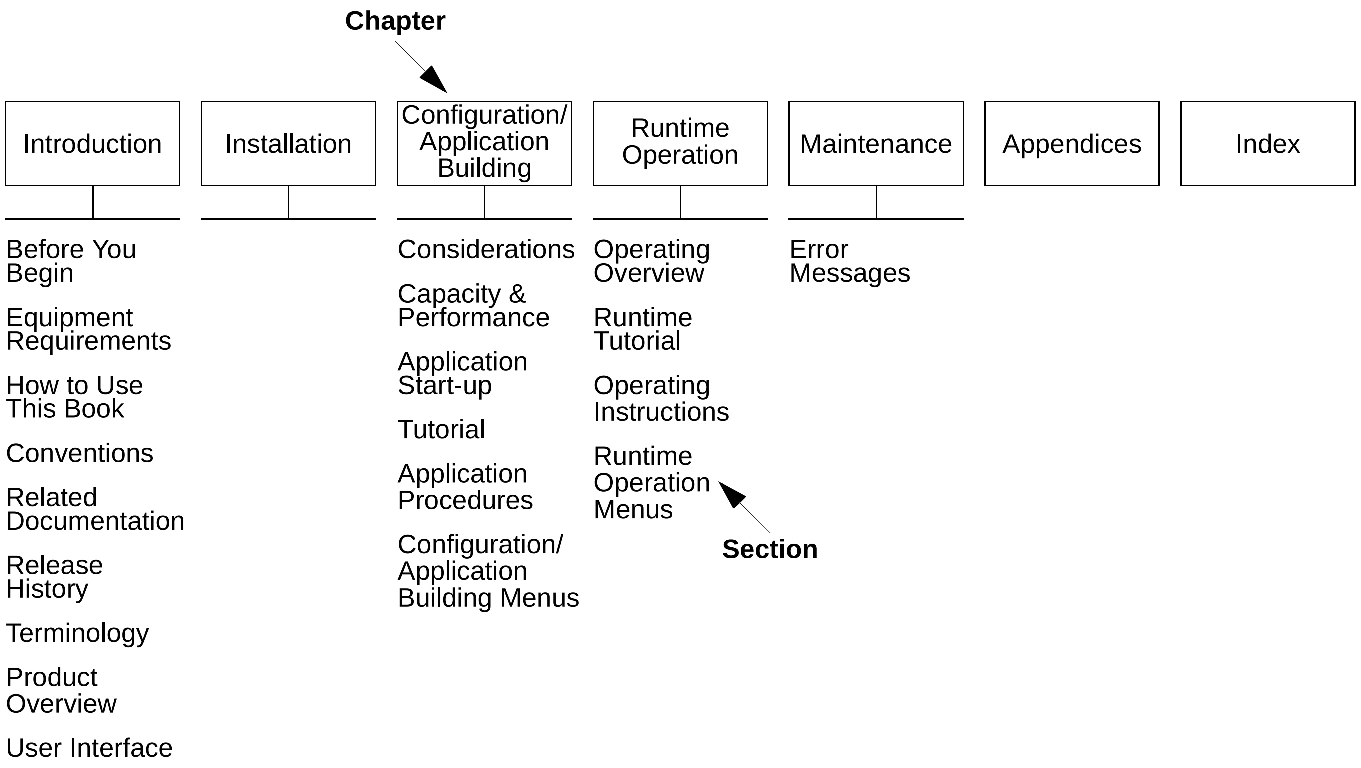


Figure 1-1. Organization of Manual

The main part of this users guide is placed in Chapter 3, Configuration/Application Building. Here you will find general considerations, application procedures, and as a reference part, a description of all menu commands.

1.4 Conventions

Keyboard interaction

When you read	**You shall**
File | Copy	Open the **File** menu, choose the item **Copy**, and click it with left mouse button
Ctrl+M	Press the **Ctrl** key and the key labelled **M** simultaneously

1.5 Related Documentation

Table 1-1. Related Documentation

Title	Description
Structure Builder User's Guide	Describes how to create projects, Advant objects, structures and aspects and how to navigate in projects
Wiring Builder User's Guide	Describes how to handle wiring data, i.e. wires and cables assigned to physical connections between devices
*el*Master design User's Manual	Describes how to create circuit diagrams using symbol and format libraries
*el*Master project User's Manual	Describes how to create structures, objects and assign articles to objects
*el*Master project administrator User's Manual	Describes how to perform administrative tasks on the database like, e.g. create and maintain article libraries, edit system variables and configuration parameters
Parameter Builder User's Guide	Describes how to handle parameter references for Advant objects and how to import engineering data
AdvaBuild Engineering Methods Reference Manual	Describes the principles of engineering based on the Advant object concept

1.6 Release History

Table 1-2 lists the major milestones in the development of the Electrical Diagram Builder

Table 1-2. Release History

Version	Description
3.0/0	This is the initial release of the Electrical Diagram Builder based on the new Advant Object Technology
3.0/1	This is the revision of the Electrical Diagram Builder to be compatible with Advant Engineering Workplace 1.1

1.7 Terminology

See Appendix C, Glossary of Terms

1.8 Product Overview

Electrical Diagram Builder supports the electrical plant engineering process. The main functions are creation and editing of electrical circuit diagrams with database connection. Diagram editing is supported using AutoCAD (R) Release 13 and the comfortable drawing support functions from *el*Master design 3.0, a product from Sigma Power Software AB.

The diagram can be edited and printed. The title block and symbols in a diagram can be updated from attribute values in the database.

Further on Electrical Diagram Builder supports the handling of product data for electrical equipment like motors, relays, cables or terminal bars but also mounting equipment like enclosures or racks in the engineering database. It is possible to change these data and to create reports, for example, parts lists.

Electrical Diagram Builder is working in cooperating mode together with Structure Builder, that is:

- Electrical diagrams and electrical product data can be created, duplicated or deleted in the Structure Builder
- Electrical diagrams can be opened from Structure Builder
- Electrical diagrams can represent data from Structure Builder, like reference designations or Advant Object names.

1.8.1 Electrical Diagrams

Electrical Diagram Builder supports handling of **Electrical Circuit Diagrams**. A diagram comprises of:

- The drawing file itself
- Diagram related reference designations
- Title block attributes
- Descriptive data.

You can attach existing drawing files to an Advant Object and detach the associated drawing file.

Drawing Functions on Diagrams

The drawing functions of the Electrical Diagram Builder are provided on top of AutoCAD13 functions. The functions are separated into two different parts:

- Base commands
  used to provide the basic functions like for example:
  - Format functions to manage drawing formats (drawing frame, title block and revision block)
  - Block library functions to create, delete and administer symbols in libraries.
  - Layer and layer group functions to change the status for layers and layer groups

  - Global change functions to make changes that are common to a number of drawings
  - Plotting functions to steer the plotting to the correct printer with the correct settings
  - Text functions for creating, editing, altering the appearance of text.
- Circuit diagram commands used to draw circuit diagrams
  - Break, stretch, move and close single-/multiple connection lines
  - Cross-reference handling for main-/sub-symbols
  - Signal reference handling
  - Insert terminals, renumber terminals
  - Draw boundary frames for nesting of designations
  - Configuration functions to setup the drawing environment
  - Insert cable/wire markers.

Handling of Reference/Item Designations

Reference-/item designations according IEC750 and IEC1346 can be updated from database to associated symbol representations. The different types of reference designations are:

- Function reference designation (=)
- Product reference designation (-)
- Location reference designation (+)
- supplementary designations, which can be configured for a project
  (either #, &, ++, == or designations provided by basic properties).

Symbol and Title Block Update

The Electrical Diagram Builder provides mechanisms to update symbols in the drawing with data available from Structure Builder. This includes the functionality:

- Link symbols to aspects in the database
  - by use of reference designations (function or product oriented)
  - by use of free names.
- Update reference designations from database into diagrams according to the following international standards:
  - IEC 750:1983
  - IEC 1082
- Update descriptive attributes from database (names, descriptions) into drawings
- Update terminal designations from database into diagrams
- Update Advant OCS symbolic and absolute addresses for I/O symbols
- Attribute values can be updated in title blocks of reports and diagrams.

1.8.2 Electrical Plant Object Data

Electrical Diagram Builder provides mechanisms to create, delete and duplicate electrical plant object data of an Advant Object, create references to articles in the article library and edit terminals. Electrical plant object data comprises:

- Electrical device data (for Advant Objects of type motors, sensors, etc.)
- Electrical cable data
- Electrical function data (for Advant Objects of type signal and channel)
- Structure level data related for function/location structures

1.8.3 Electrical Reports

Electrical Diagram Builder provides mechanisms to create, delete, duplicate and print reports. Reports can be configured based on report type definitions and report parameters. Standard reports like e.g. parts lists according to ABB corporate standards are available. Users can define reports in an flexible way by using the Microsoft Access functions.

1.8.4 Project and User Administration

The Electrical Diagram Builder provides functions for the administration of:

- Projects, for example, create/delete/duplicate project
- Users, for example, create, delete, assign users.
- Backup and Restore of project data is supported

The functions are coupled with the corresponding Structure Builder functions and are therefore not provided with a specific user interface.

1.8.5 Bulk Data Handling

The following dialog functions allow efficient bulk data handling:

- Navigation

  A number of aspects, circuit diagrams or electrical devices can be selected and attributes can be edited using data sheet or form view.

- Multiple execution

  Multiple execution of specific commands on the list of selected aspects, for example print a list of selected diagram aspects allows efficient bulk data handling.

- Copy special

  allows you to copy several selected aspects to a number of selected Advant Objects.

1.8.6 Basic Symbol and Format Libraries

The Electrical Diagram Builder is shipped with basic symbol- and format libraries to efficiently create circuit diagrams. This includes the most relevant symbols according to the current standards IEC113, IEC 1082 and IEC617 like:

- Relay coils and contacts
- Motors
- Sensors, transmitters, transducers
- Signalling devices
- Main circuit switches
- Fuses
- Terminals.

The following basic symbol libraries are supplied for the Electrical Diagram Builder:

- IEC113 (circuit diagram symbols according IEC113)
- IEC1082 (circuit diagram symbols according IEC1082)
- IEC617 (library with graphical primitives according IEC617)
- IEC11714 (circuit diagram symbols according IEC617 and IEC11714).

The following basic format libraries are supplied for the Electrical Diagram Builder:

- IEC formats for different paper sizes according to ABB corporate standard
- DIN formats for different paper sizes according to ABB corporate standard.

1.9 User Interface

The functions of Electrical Diagram Builder are implemented by Windows programs with the typical graphic user interface and look-and-feel of Windows programs.

The dialogs that will appear on the screen, normally have Help buttons. Clicking this button will open the Electrical Diagram Builder's on-line help, where you will get context-sensitively help to the actual topic.

The user interface to create drawings is based on the well-known functionality from AutoCAD extended by additional functions for electrical CAD-applications.

The user interface to the database is implemented with Microsoft Access. This allows all users to easily adapt reports and forms and to gain from the full set of functions provided by Microsoft Access.

Chapter 2 Installation

For the description how to install the Electrical Diagram Builder refer to the *Electrical Diagram Builder Release Notes*.

Chapter 3 Configuration/Application Building

3.1 Considerations

3.1.1 AdvaBuild Engineering Software and Advant Object Technology

Please refer to the corresponding section in the Structure Builder User's Guide for an overview about the AdvaBuild Engineering Software, Advant Object Technology and the individual Builders.

3.1.2 Electrical Diagram Builder Overview

The Electrical Diagram Builder is composed of the following parts:

- Electrical Diagram Builder Database
- Aspect Request Broker Interface
- Electrical Diagram Builder Dialogs
- *el*Master design
- *el*Master project administrator
- *el*Master project

The overview about the different parts of the Electrical Diagram Builder is given in the following sections and Figure 3-1.

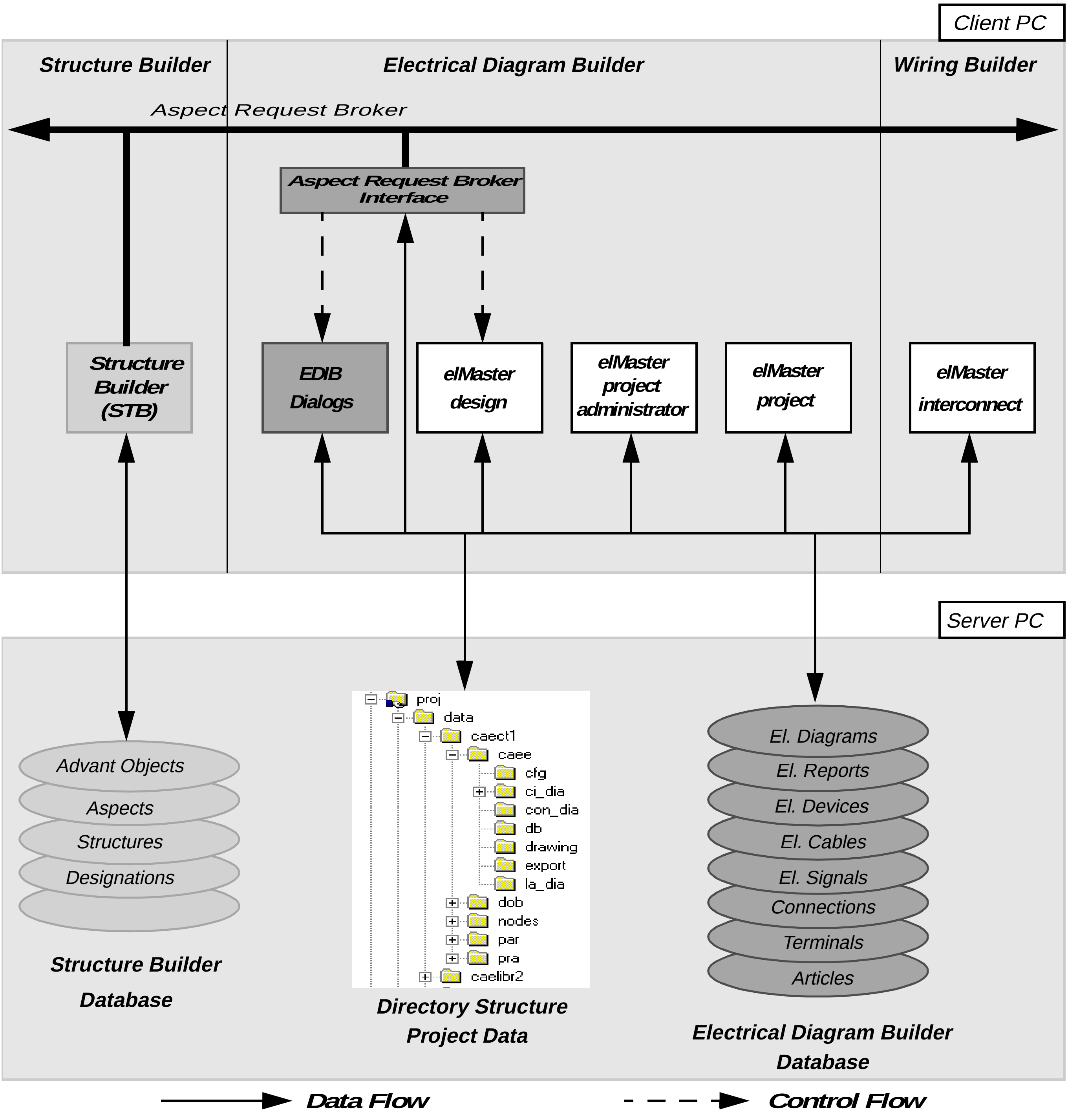


Figure 3-1. Electrical Diagram Builder - Overview

3.1.2.1 Electrical Diagram Builder Database

The **Electrical Diagram Builder** database is an **Oracle** database and serves as the central data storage for the plant data required to perform the electrical engineering of a plant. The database includes the *el*Master project database and contains additionally parts to integrate with the products of the AdvaBuild Engineering Software, e.g. the Structure Builder. The database resides on a sever PC and can be accessed from several client PC in a network. The **Electrical Diagram Builder** accesses the database from the client PC.

The plant data stored in the **Electrical Diagram Builder** database can be categorized in the following main groups:

- Project and User data
- Electrical Aspect data:
  - El. Structure
  - El. Diagrams
  - El. Devices
  - El. Functions
  - El. Cables
  - El. Reports
- Article data
- Wiring data (terminals and electrical connections)

3.1.2.2 Aspect Request Broker Interface

The **Electrical Diagram Builder** interfaces to the **Structure Builder** via the **Aspect Request Broker** to provide the following functions:

Functions on Advant Objects and their aspects:

- Open Command on electrical aspects
- Print Command on electrical aspects
- Synchronize Command to synchronize structures and designations between the Structure Builder database and the Electrical Diagram Builder database for individual Advant Objects and the whole Project

Project administration functions:

- Add a new project and delete an existing project
- Register a new Builder to an already existing project
- Export and Import a whole project
- Add and delete users
- User to Project assignment

3.1.2.3 Electrical Diagram Builder Dialogs

The Electrical Diagram Builder dialogs provide the main interface for the user to access the plant data in the Electrical Diagram Builder database. Dialogs are provided to:

- Edit aspects for Electrical Plant Objects
- Edit aspects for Electrical Diagrams
- Edit aspects for Electrical Reports and define new report types
- Edit common Project Data
- Select articles from the article library for electrical cables and devices and assign the articles to Electrical Plant Objects
- Display the terminals related to Electrical Plant Objects

3.1.2.4 *el*Master design

*el*Master design is used to provide the drawing functions of Electrical Diagram Builder to create and modify Electrical Diagrams based on AutoCAD 13 with connection to the Electrical Diagram Builder database.

3.1.2.5 *el*Master project administrator

*el*Master project administrator is used to perform some administrative tasks to the Electrical Diagram Builder database. Within Electrical Diagram Builder the following functions of *el*Master project administrator are specifically relevant as this is the only way to perform the function:

- Edit and modify System Variables
- Import and export Articles to/from the Article Library
- Maintain the project specific Article Library
- Configure *el*Master reports

3.1.2.6 *el*Master project

*el*Master project is the product to manage the plant objects and structures in a pure elMaster Power Concept engineering environment. Within Electrical Diagram Builder this product is only required to perform some specific functions not available via the Structure Builder or the Electrical Diagram Builder dialogs:

- Add manually terminals to objects
- Approve documents
- Print *el*Master reports

3.1.3 Design considerations

3.1.3.1 Directory structure overview

AdvaBuild environment settings

The default directory to store the AdvaBuild environment settings is **C:\Advabldenv**.

If you do not want to use the default directory listed in Table 3-1 you may use the corresponding environment variable. The environment variable points to the directory you want to use instead of the default directory.

Default Directory	Environment Variable	Remark
C:\Advabldenv	ADVABLDENV	Used for storing some client specific data like used drives, Builder specific settings, etc.

Table 3-1. Environment variables

In case you use a name other than the default name his environment variable is set by the setup program.

If you do not have drive C: available, you need to change the default directory to another value, for example D:\Advabldenv. In this case the environment variable has to be used.The environment variable is case sensitive, that is, it has to be written in all uppercase letters.

Share Names and Mapped Network Drives

This section describes how to access the server’s directories from the client PCs. Table 3-2 shows an example of the share names and the mapped drives.

Client PC	Mapped Drive	Server PC	Share Name	Description
abtool1 on ’Abusrv02’(1)	J:	D:\advabld	abtool1	The directory where the Builders are installed.
advaBld1 on ’Abusrv02’(1)	L:	D:\proj	advabld1	The directory for the project data.

Table 3-2. Share Names and Mapped Network Drives

(1) This is an example for a server name.

Before installing the Builders and before starting them, the network drives must be mapped. The drive letter has to be the same for all users working with that client PC.

3.1.3.2 Directory structure Electrical Diagram Builder product

The Electrical Diagram Builder product files are located below the share **abtool1** in the installation directory **\caee\***ProductVersion***\\. Table 3-3** shows the product directories:

Directory	Description
bin	This directory contains the Electrical Diagram Builder program files
cadlib	This directory contains the Electrical Diagram Builder symbol and format library
cdb	This directory contains the master files for the project specific Electrical Diagram Builder client database. The client database contains the Electrical Diagram Builder dialogs and reports
edib	This directory contains the Electrical Diagram Builder release notes
hdb	This directory contains the program files for the Electrical Diagram Builder database
netsetup	This directory contains the files to install the Electrical Diagram Builder client software on your client PC
tools	
wib	This directory contains the Wiring Builder release notes

Table 3-3. EDIB installation directories

3.1.3.3 Directory structure symbol and format library

Table 3-4 shows the symbol and format library directories located in the directory **cadlib**:

Directory	Description
articles	Directory for the articles and cable catalog utilities (examples)
bdb	Directory for the block database contains symbol- and format library settings and the title block mapping between the database and the drawing
caeeform	Directory for the format library
iec1082	Directory with the symbol library according to standard iec1082
iec113	Directory with the symbol library according to standard iec113

Table 3-4. Symbol and format library directories

Directory	Description
iec11714	Directory with the symbol library for circuit diagram symbols according to standard iec617
iec617	Directory with the symbol library for pure graphical symbols according to standard iec617
layuser	Directory with the symbol library for layout drawings
mluser	

Table 3-4. Symbol and format library directories

3.1.3.4 Symbol and Format database

The Symbol and Format database (also called block database) is a Microsoft Access database **blocklib.mdb** located in the directory **...\cadlib\bdb** containing settings for Symbols in the table **BLOCK**, Formats in the table **FORMAT**. The entries in the tables **BLOCK** and **FORMAT** can be maintained completely from the *el*Master design dialogs for blocklib and format administration. Refer to the *el*Master design User's Manual for more details concerning the symbol and format library administration.

3.1.3.5 Title Block Mapping

The Title Block Mapping information is stored in the table **MAPPING** of the block database **blocklib.mdb** located in the directory **...\cadlib\bdb**. The entries in the table **MAPPING** can only be maintained with Microsoft Access.

Refer to chapter 2 of the elMaster project administrator User's Manual for more information about this table.

3.1.3.6 Directory structure for project data

The Electrical Diagram Builder project data files are located below the share **advabld1** in the directory **\data\***ProjectName***\caee\\. Table 3-5** shows the project data directories:

Directory	Description
cfg	Directory for project specific configuration files
ci_dia	Directory to store the drawing files for circuit diagram aspects
con_dia	Directory to store the drawing files for connection diagram aspects (For future use)
db	Directory for the project specific Mircosoft Access database
drawing	Directory to store the drawing files for diagram aspects (For future use)

Table 3-5. Project data directories

Directory	Description
export	Directory for project specific export purpose
la_dia	Directory for layout drawings (For future use)

Table 3-5. Project data directories

3.1.3.7 Configuration of EDIB System variables in the database

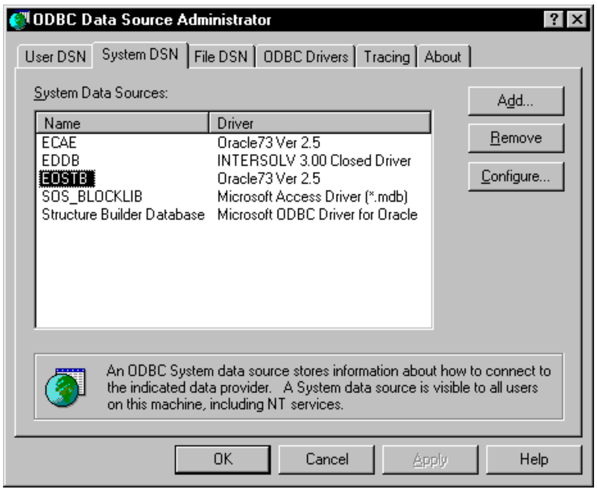
Electrical Diagram Builder performs functions based on system variables stored in the database. The variables can be maintained using *el*Master project administrator. For the complete list of EDIB system variables see Appendix B, EDIB System Variables in the Database.

3.1.3.8 Configuration of ODBC Data Sources

Electrical Diagram Builder requires some ODBC data sources to be defined. The settings are automatically done during installation of the client PC.

To verify the correct settings run **Start | Settings | Control Panel**

and select the **ODBC** icon to start the ODBC Data Source Administrator

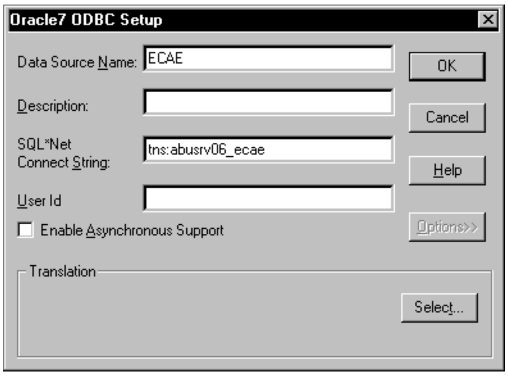


Name	Driver
ECAE	Oracle73 Ver 2.5
EDDB	INTERSOLV 3.00 Closed Driver
EOSTB	Oracle73 Ver 2.5
SOS_BLOCKLIB	Microsoft Access Driver (*.mdb)
Structure Builder Database	Microsoft ODBC Driver for Oracle

An ODBC System data source stores information about how to connect to the indicated data provider.   A System data source is visible to all users on this machine, including NT services.

Figure 3-2. ODBC Data Source Administrator Dialog

Select the **System DSN** tab, then a data source in the **System Data Source** window and click the **Configure** button to enter the **ODBC Setup** Dialog for the selected data source. The dialog will look different depending on the ODBC driver see Figure 3-3, Figure 3-4 and Figure 3-5:


Oracle7 ODBC Setup

Data Source Name: ECAE

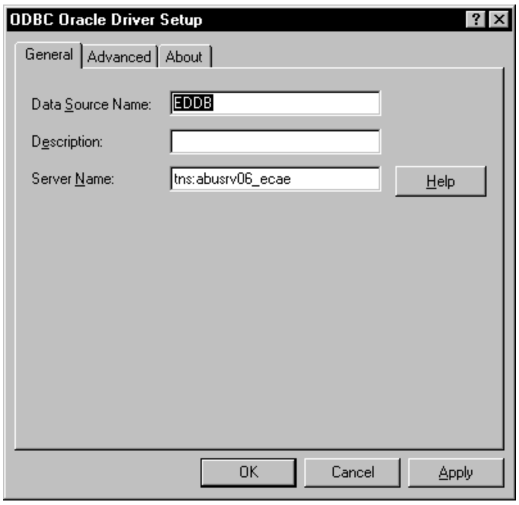
Description:

SQL*Net Connect String: tns:abusrv06_ecae

User Id

☐ Enable Asynchronous Support

Figure 3-3. ODBC Setup Dialog - Oracle73 Ver 2.5

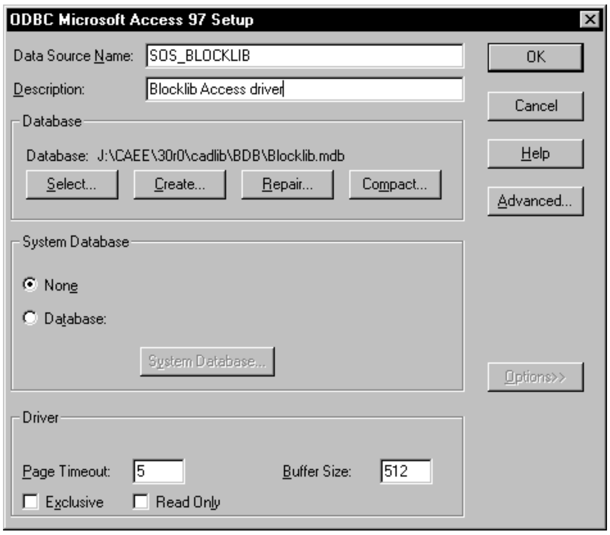

ODBC Oracle Driver Setup

Data Source Name: EDDB

Description:

Server Name: tns:abusrv06_ecae

Figure 3-4. ODBC Setup Dialog - INTERSOLV 3.00 Closed Driver



Data Source Name: SOS_BLOCKLIB

Description: Blocklib Access driver

Database: J:\CAEE\30r0\cadlib\BDB\Blocklib.mdb

● None

○ Database:

Page Timeout: 5

Buffer Size: 512

☐ Exclusive ☐ Read Only

Figure 3-5. ODBC Setup Dialog - Microsoft Access Driver

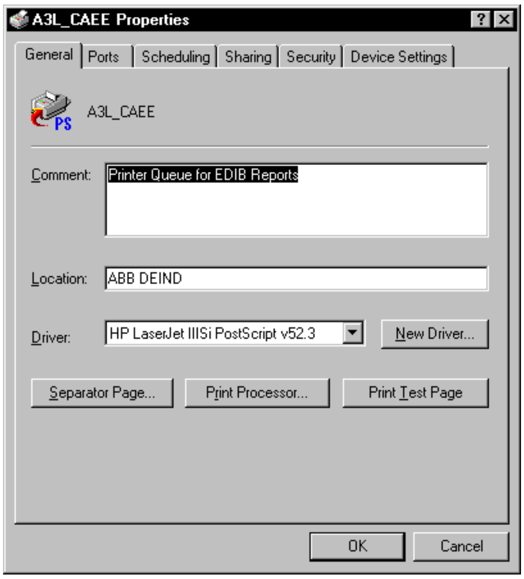
The required ODBC Data Sources for the Electrical Diagram Builder are listed in Appendix A, ODBC Data Sources

3.1.3.9 Printer Configuration for EDIB Reports

To be able to print or modify Electrical Diagram Builder reports some configuration settings are required:

1. The MS Access reports included as examples within Electrical Diagram Builder Dialog are build for the printer queue A3L_CAEE. Because every time those reports are touched MS Access looks for this queue, there should be defined on each client a queue with the name **A3L_CAEE**. If this queue will be used for printing, it must be defined as postscript

queue, because scaling is required to print on A4 paper size as the delivered reports are defined for A3 format.



A3L_CAEE Properties

A3L_CAEE

Comment: Printer Queue for EDIB Reports

Location: ABB DEIND

Driver: HP LaserJet IIISi PostScript v52.3

Figure 3-6. CAEE specific Printer Queue

2. It is recommended that MS Access report names follow the naming convention <***PaperFormat***>_<***Name***>

   where:

   PaperFormat is build by 3 characters:

   – Position 1 and 2: Paper size like, e.g. **A3**, **A4**, etc.

   – Position 3: Orientation like, e.g. **L** (Landscape) or **P** (Portrait)

   Name is a free definable string
   Example: **A3L_PL1**

3. Microsoft Access stores the settings for printer and page setup options within a report, so you normally have to specify the settings for each report. This means on other hand side, that each user working with the same report will get the same printer setting.

   To be able to have printer settings for each user, but used for all reports with same format, Electrical Diagram Builder searches for a specific report definition containing the user specific settings according the naming rule <***PaperFormat***>_<***ComputerName***>

Example: **A3L_GIT1014**

To create the file according to the rule do following steps:

1. Create a report aspect

2. Open report aspect (**Open | Attributes**), select report type and enter report parameter values (if needed)
3. Open preview of report (choose **Print | Preview** from Report toolbar)
   Then the report will be shown in preview mode and will be named *<ComputerName>***Report** (example:**GIT1014Report)**
4. Now adjust your settings and make test printouts, till you are satisfied with the result
5. Save the report incl. its settings via **File | Save as/Export** according the described naming conventions (example: **A3L_GIT1014**)

Now all A3L reports will use those page/printer settings within this project for your printouts

3.2 Capacity and Performance

3.3 Database Configuration

3.3.1 Database Files

The Electrical Diagram Builder database files are located below the share **advabld1** in the directory **\eoadmin\caee\adm\db_ts**. **Table 3-6** explains the database files:

File	Description
System_1.dbf	System Tablespace file
Temp_1.dbf	Temporary Tablespace file
User_1.dbf	User Tablespace file
Redo_1.dbf	Redo Log database file
Redo_2.dbf	Redo Log database file
Rs_1.dbf	Rollback Segment database file
*ProjectName***.dbf**	Project Tablespace file (one file for each engineering project)

Table 3-6. Database Files

WARNING

Do not delete or modify one of the files. Only an Oracle database administrator should access the files.

3.3.2 Configuration Files

The configuration parameters for the Electrical Diagram Builder database are stored in the file *<OracleHome>***\Database\initECAE.ora**. This file is processed each time the database is started. It may be necessary to change the settings in this file due to your needs.

WARNING

Changes to this file should be made by your Oracle database administrator only.

3.4 Application Start-up

3.4.1 Start and Shut down of the database

Start Up Electrical Diagram Builder Database

Before starting Electrical Diagram Builder you have to start up the Electrical Diagram Builder database. To start up the Electrical Diagram Builder database, log in as Windows NT administrator (or as a member of the **Administrators** group) on your server PC.

Run **Start | Advant | Engineering | Electrical Diagram Builder Start Up Database**

Shut Down Electrical Diagram Builder Database

Before shutting down the server PC, shut down the Electrical Diagram Builder database.

To shut down the Electrical Diagram Builder database log in as Windows NT administrator (or as a member of the **Administrators** group) on your server PC. Be sure that no user is working on the Electrical Diagram Builder database when you shut it down. Run

Start | Advant | Engineering | Electrical Diagram Builder Shut Down Immediate Database

to shut down the database and wait until all users have logged of the database. Run

Start | Advant | Engineering | Electrical Diagram Builder Shut Down Abort Database

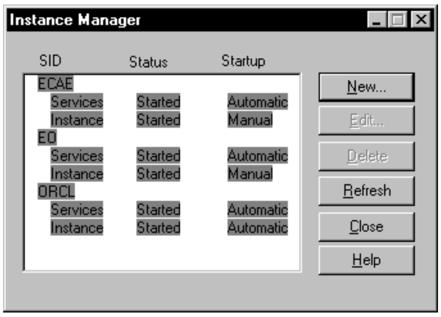
to shut down the database although users are currently logged into the database by aborting their database session.

Check Status of Electrical Diagram Builder Database

To check whether the Electrical Diagram Builder Database in running or not, run

Start | Programs | Oracle for Windows NT | NT Instance Manager.

Check the **Status** column in the **Instance Manager** dialog to find out whether the Electrical Diagram Builder database is running or not. The status for the database instance is either **Started** or **Stopped**:



SID	Status	Startup
ECAE		
Services	Started	Automatic
Instance	Started	Manual
EO		
Services	Started	Automatic
Instance	Started	Manual
ORCL		
Services	Started	Automatic
Instance	Started	Automatic

Figure 3-7. Oracle Instance Manager

Click **Close** to leave the Instance Manager.

3.5 Tutorial

See *AdvaBuild Engineering Method's Reference Manual.*

3.6 Application Procedures

3.6.1 Administrative Steps for Project Start-up

3.6.1.1 Install a Client/Server Environment

AdvaBuild Engineering Software consists of several products, basic units and options, which may again contain several Builders like **Structure Builder**. Depending on your special needs, you may select some or all products. Some of them are mandatory, while others are optional. When you want to use the Advant object technology, it is necessary, that you have Structure Builder and Advant Engineering Server installed on your system.

Cooperating Builders must reside on the same PC. This is necessary, because cooperation works via the **Aspect Request Broker**, which works locally on one PC. As the Aspect Request Broker is part of the Structure Builder, the Structure Builder is mandatory on each client, because it will start all other Builders via the broker.

On the server PC the server part of **Advant Engineering Server** and of Structure Builder are installed. Beside the Oracle® database it hosts the harddisk area for project data and for the network installation of all Builders. To be able to run a certain Builder from a client PC, you must start the **Setup** program from the **Netsetup** directory of that Builder. The **Setup** program will copy data you need to start the Builder to the harddisk of the client PC.

To perform this task it is necessary that the client PC and the server PC are connected to a network.

It is possible to install the client and server part of the Builders on one PC. For more information about installation, read the Release Notes of **Advant Engineering Server**.

You can read about the network environment you need and about software installation in the Release Notes of each Builder.

3.6.1.2 Create a Project

The next step after the setup of your environment and software installation is to create a project. A project is on one hand a container for engineering data and on the other hand an entity which holds access rights of users working with the project data. It is the task of the administrator to create a project.

Project administration is a task with high security demands. Therefore, if you want to administer projects, you have to log into the administration utility with a special administrator password. As administrator you can create and delete whole projects. Further on you can backup and restore projects and adjust the space used for a certain project in the projects's database. And you can modify the passwords of users.

An user that shall become a member of a certain project, must be assigned to the Windows NT group **AdvaBuild_engineers**. This can be performed with the Windows NT **User Manager**.

Members of **AdvaBuild_engineers** can be assigned by the administrator to a certain project. Further on, the administrator can specify whether a project member has read or write access to the project data.

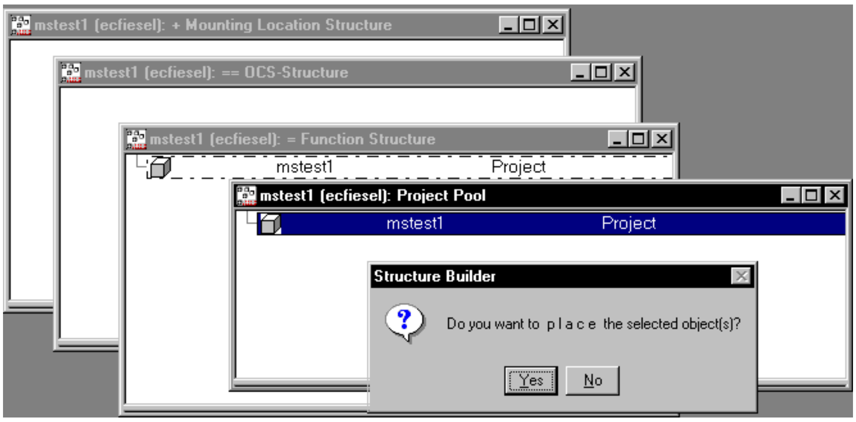
You can start the administration utility with the **Project | Administration** menu command in Structure Builder.

3.6.1.3 First Structure Builder Configurations

When you have created a new project with the **Project | Administration** menu command, you can close the **Administration** dialog and open the project with the **Project | Open** menu command (see Structure Builder User's Guide).

Prepare top objects in structures

When you are logged into the project, the **Open Structure** dialog will be displayed. It lists some predefined structures, which are empty at project creation time. The only existing object is the Project object within Project Pool. It is recommended to place this object as top object within all other used structures, at least if you want to create the subordinated objects via import functionality within Structure Builder


mstest1 (ecfiesel): + Mounting Location Structure
mstest1 (ecfiesel): == OCS-Structure
mstest1 (ecfiesel): = Function Structure
mstest1
Project
mstest1 (ecfiesel): Project Pool
mstest1
Project
Structure Builder
Yes
No

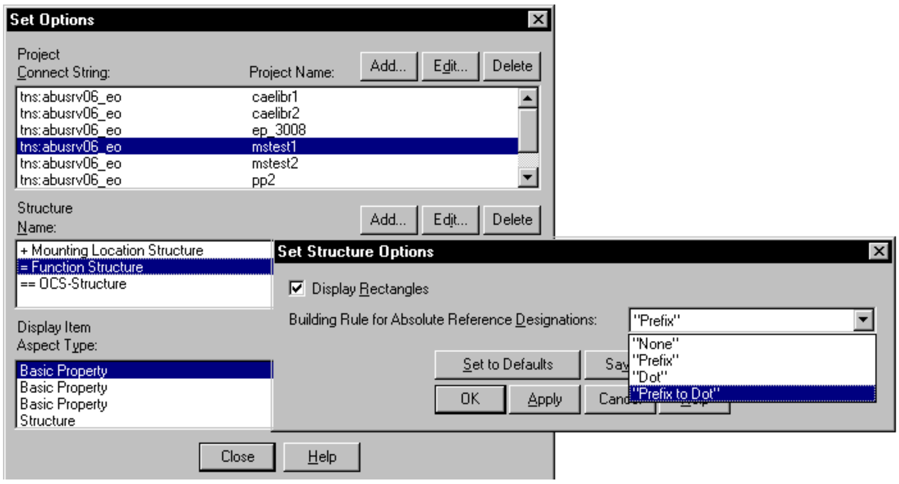
Do you want to place the selected object(s)?

Figure 3-8. Prepare top objects in structures with Structure Builder

Configure Reference Designation Rules

If you want to display absolute reference designations within different structure windows, you normally have to adapt the calculation rule. Therefore call the **Set Options** dialog via P**roject |**

Options... , add the corresponding structures to Structure list and press **Edit** to call the **Set Structure Options** dialog.



Project Connect String:	Project Name:
tns:abusrv06_eo	caelibr1
tns:abusrv06_eo	caelibr2
tns:abusrv06_eo	ep_3008
tns:abusrv06_eo	mstest1
tns:abusrv06_eo	mstest2
tns:abusrv06_eo	pp2

Structure Name:

- + Mounting Location Structure
- = Function Structure
- == OCS-Structure

Display Item Aspect Type:

- Basic Property
- Basic Property
- Basic Property
- Structure

☑ Display Rectangles

Building Rule for Absolute Reference Designations: "Prefix"

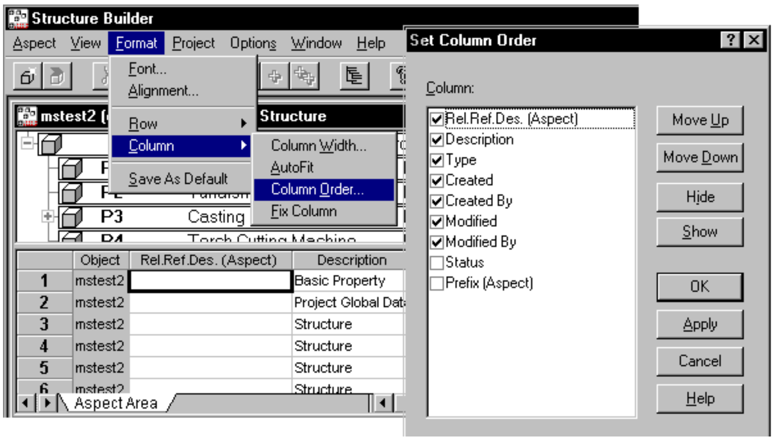
- "None"
- "Prefix"
- "Dot"
- "Prefix to Dot"

Figure 3-9. Configure reference designation presentation in Structure Builder

Note: this configuration is local for the Structure Builder and does not influence the way of mapping reference designations to the Electrical Diagram Builder database, which is explained within Chapter 3.6.1.4, First Electrical Diagram Builder Configurations. But you should use the same rules for both purposes not to get confused.

Configure Aspect Area

It is helpful to include Aspect Rel.Ref.Des. attribute within the aspect area, because data within this attribute can be used for Electrical Diagram Builder diagram/report aspects for sheet identification purpose.



Column:

- ☑ Rel.Ref.Des. (Aspect)
- ☑ Description
- ☑ Type
- ☑ Created
- ☑ Created By
- ☑ Modified
- ☑ Modified By
- ☐ Status
- ☐ Prefix (Aspect)

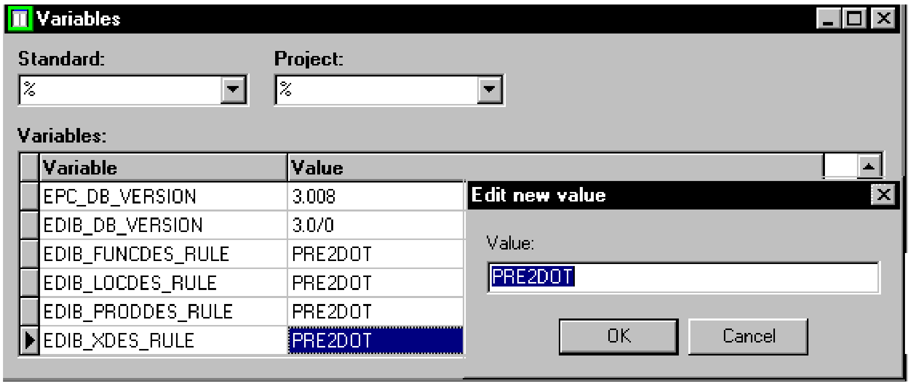
	Object	Rel.Ref.Des. (Aspect)	Description
1	mstest2		Basic Property
2	mstest2		Project Global Dat
3	mstest2		Structure
4	mstest2		Structure
5	mstest2		Structure
6	mstest2		Structure

Figure 3-10. Configure columns in Structure Builder aspect area

3.6.1.4 First Electrical Diagram Builder Configurations

Configuration of Reference Designation rules for synchronization

Reference designation will be transferred from **Structure Builder** to **Electrical Diagram Builder** database during synchronization phases. According which rule it will be selected from **Structure Builder** must be configured per project via **Variables** dialog within **elMaster Project Administration**. For more details see Appendix B, EDIB System Variables in the Database.



Standard: %

Project: %

Variables:

Variable	Value
EPC_DB_VERSION	3.008
EDIB_DB_VERSION	3.0/0
EDIB_FUNCDES_RULE	PRE2DOT
EDIB_LOCDES_RULE	PRE2DOT
EDIB_PRODDES_RULE	PRE2DOT
EDIB_XDES_RULE	PRE2DOT

Value: PRE2DOT

Figure 3-11. Configure Reference Designation rules used for synchronization

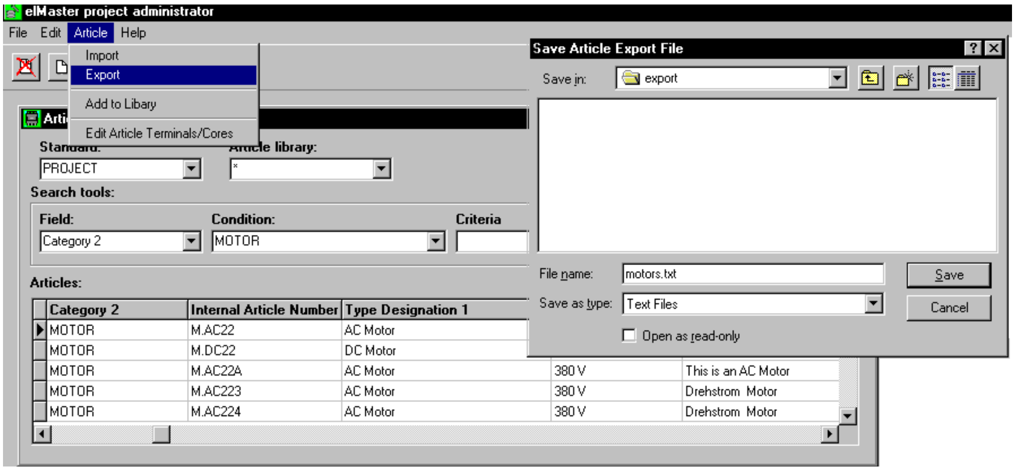
3.6.1.5 Article Library Preparations

Before using article references (for example during importing solutions within Structure Builder Import), the article library must be prepared within the target project. This means, you have to

- import articles from available libraries (library project, other projects,..)
- add manually further articles not yet available within library

You can also add articles later just before you want to refer to it the first time

The easiest way to get articles is to export them at first from another project. Therefore you have to start up elMaster Project Administration on the corresponding project, filter for the needed articles and run export via **Article | Export**.



Standard: PROJECT

Article library: *

Search tools:

Field: Category 2

Condition: MOTOR

Criteria

Articles:

Category 2	Internal Article Number	Type Designation 1		
MOTOR	M.AC22	AC Motor		
MOTOR	M.DC22	DC Motor		
MOTOR	M.AC22A	AC Motor	380 V	This is an AC Motor
MOTOR	M.AC223	AC Motor	380 V	Drehstrom Motor
MOTOR	M.AC224	AC Motor	380 V	Drehstrom Motor

Save in: export

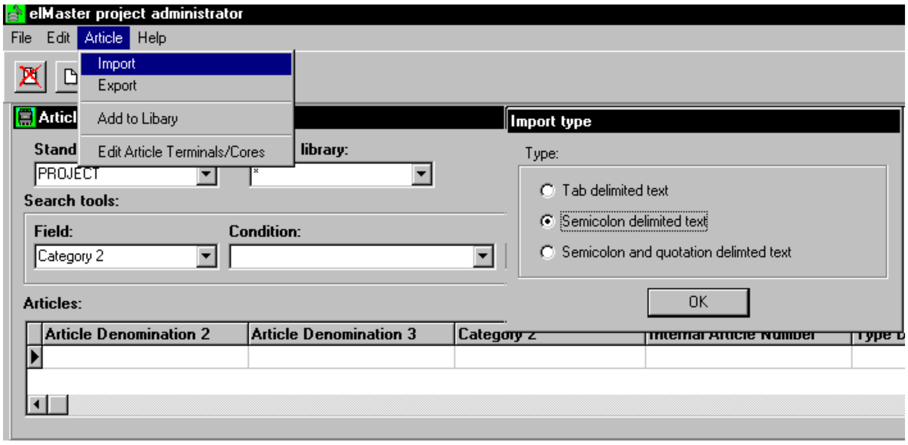
File name: motors.txt

Save as type: Text Files

☐ Open as read-only

Figure 3-12. Exporting articles from other projects

In the opposite way you can now import those articles into the new project via **Article | Import**. Be aware, that you have to start-up elMaster Project Administration new and login for the new project. As import format must be used **Semicolon delimited text** format



Stand: PROJECT
Field: Category 2

Import type

Type:

○ Tab delimited text
● Semicolon delimited text
○ Semicolon and quotation delimted text

Figure 3-13. Importing articles into a project

3.6.1.6 Symbol Library Preparations

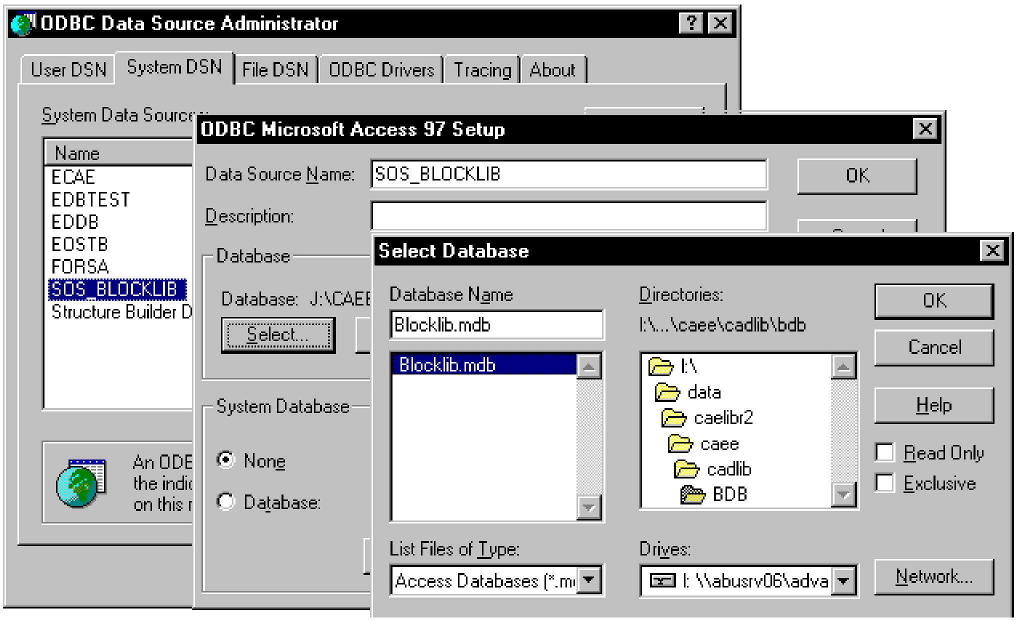
If you are satisfied with the symbol libraries as it are installed with the Electrical Diagram Builder, there are no needs to do further preparations.

But the normal case will be, that symbol libraries will be extended to installation or even project specific needs. Therefore it might be sensible to work on a copy of the standard symbol library.

This can be done according following steps:

1. Create a library directory on the server, for example below the library project you use
2. Copy the library parts you want to use from `abtool1\caee\<version>\cadlib\..` to the target library (don't forget `...\bdb\blocklib.mdb`)

3. redefine the ODBC Datasource SOS_BLOCKLIB to access the symbol library administration database via ODBC settings within Windows NT Control Panel. This must be done client specific.



Data Source Name: SOS_BLOCKLIB

Database Name: Blocklib.mdb

Directories: I:\...\caee\cadlib\bdb

List Files of Type: Access Databases (*.m

Drives: I: \\abusrv06\adva

System Database: ● None ○ Database:

☐ Read Only

☐ Exclusive

Figure 3-14. Redefine reference to symbol library administration database

4. adapt symbol directory references within masterline.ini file within the elMaster design installation (must be done client specific)

3.6.2 Structure Builder Operations

3.6.2.1 Create new Advant Objects

To create Advant Objects from scratch within Structure Builder, select **New** from **Object** menu.

It’s assumed that the Advant Object is already placed in a certain structure. So to get sensible designations edit following data

- give a relative reference designation on structure related Structure Aspect (should be unique within subtree scope)
- give a object name on Basic Properties aspect of type Customer Id (should be unique within whole project)

NOTE

Creating Advant Objects from scratch should only be done for creating patterns for copy purpose (for example in a library project).

3.6.2.2 Add CAEE Aspects

Each Advant Object relevant for CAEE as electrical plant object needs at least one of the following aspects

- El.Structure: used for structuring levels for example in function or location oriented structure or
- El.Device: for parts, which may get a relation to an article or
- El.Cable: for cables used within elMaster Interconnect or
- El.Function: for I/O signals related to the control system

Optionally it can have additionally CAEE documentation aspects of type

- Circuit Diagram (one for each diagram sheet)
- Report (one for each report)

Note:
Optionally already the Document Kind designations and sheet number can be predefined via the Aspect Relative Reference Designation, if following syntax is used:

`&<docdes>/<sheetnoa>\<sheetnob>`

Example: **&EPL1\L1**

All parts are only optional. For more details see Section 3.6.2.5, Editing Aspect Registry Data

3.6.2.3 Copy Advant Objects

Advant Object including CAEE aspects can be copied

- within a project
- between projects

Included in copied CAEE aspects are:

- attribute values edited for aspects
- references to articles (main and accessories), if matching article exist in target project.
  Matching articles are retrieved according following priority rule:
  1) test manufacturer name, manufacturer article number
  2) test internal article number (used also as article/cable code)
- device terminals/cable cores defined by referenced main article
- drawing files related to diagram aspects

Not included in copied CAEE aspects are

- designations (will be set during next synchronization)
- device terminals created manually or from diagrams
- elder revisions of documents (drawing files, revision history)

After copying Advant Objects you have at first to adapt designations within Structure Builder aspects.

- object names can be adapted in corresponding Basic Properties aspects (if wanted)
- reference designations can be adapted in structure related Structure aspects (if wanted)
- objects must be synchronized to get the designations updated to CAEE aspects
  - use **Synchronize Object** function on all el.plant object aspects for few copied Objects (go from upper to lower level)
  - use **Synchronize Project** function on El.Structur aspect for many copied Objects (you should complete as much as possible before synchronization whole project)

3.6.2.4 Editing Designations in STB

Edit Object Names

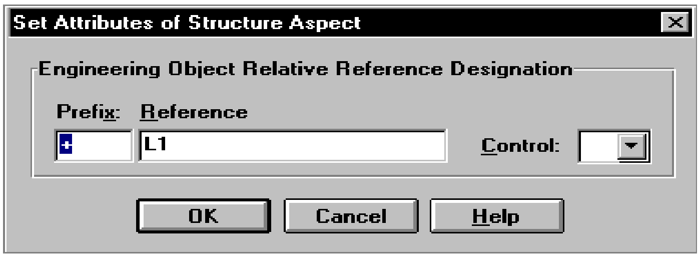
Object names are defined via Basic Properties aspects. Updated from STB to CAEE aspects are names of category:

- Customer ID:
- Mechanical ID
- Reference ID

Object names must be entered manually by the user (exception: if objects are created via import)

Edit Reference Designations

Relative Reference Designations are defined via attributes **PREFIX** and **REFERENCE** of Structure Aspects related to the corresponding structure

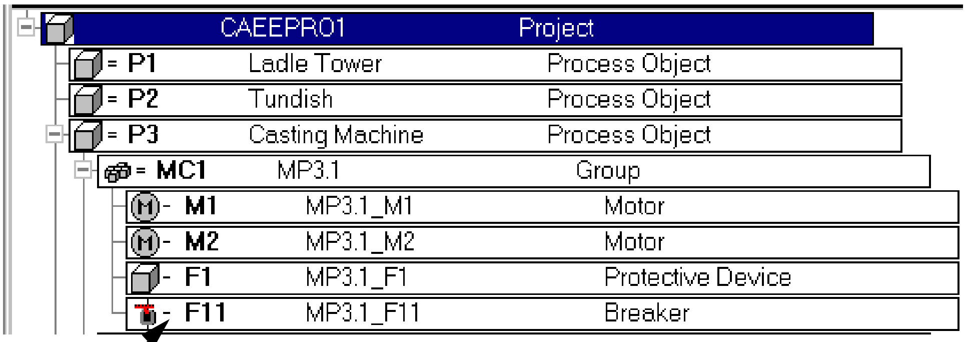

Set Attributes of Structure Aspect
Engineering Object Relative Reference Designation
Control:
OK
Cancel
Help

Prefix: +

Reference: L1

Figure 3-15. Editing reference designation in Structure Builder

Complete/Absolute Reference Designations are build automatically by concatenating all relative reference designations according the structure hierarchy.



CAEEPRO1		Project
= P1	Ladle Tower	Process Object
= P2	Tundish	Process Object
= P3	Casting Machine	Process Object
= MC1	MP3.1	Group
- M1	MP3.1_M1	Motor
- M2	MP3.1_M2	Motor
- F1	MP3.1_F1	Protective Device
- F11	MP3.1_F11	Breaker

+P3.MC1-F11 (absolute product reference designation)

Figure 3-16. Building absolute reference designation from hierarchical structures

The type of reference designation is defined by the PREFIX on last designation giving structure level in STB

Note 1: if prefix is not defined directly on Structure aspect within corresponding Advant Object, it is inherited from upper structure levels

Note 2: each Advant Object participating in building reference designation hierarchy **must** have one aspect of type El.Structure, El.Device, El.Function or El.Cable

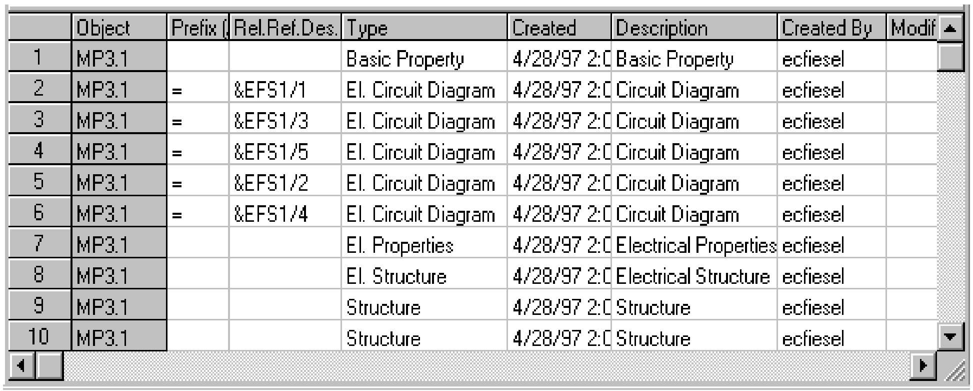
3.6.2.5 Editing Aspect Registry Data

The aspect registry data are general data available for any aspect.

It are visible and can be edited for example within the Aspect Area of Structure Builder in datasheet view. Aspect registry data related to CAEE aspect will directly be updated to the CAEE database (no synchronization necessary)

Via Rel.Ref.Des. attribute for CAEE Diagram and Report aspect optionally the document kind designation code(&), sheet number A (/) and sheet number B (\) can be predefined. For use of sheet numbers the following conventions are recommended:

- use sheet number A (/) for numbering according document id
- use sheet number B (\) for numbering according function reference designation



	Object	Prefix (	Rel.Ref.Des.	Type	Created	Description	Created By	Modif
1	MP3.1			Basic Property	4/28/97 2:0	Basic Property	ecfiesel	
2	MP3.1	=	&EFS1/1	El. Circuit Diagram	4/28/97 2:0	Circuit Diagram	ecfiesel	
3	MP3.1	=	&EFS1/3	El. Circuit Diagram	4/28/97 2:0	Circuit Diagram	ecfiesel	
4	MP3.1	=	&EFS1/5	El. Circuit Diagram	4/28/97 2:0	Circuit Diagram	ecfiesel	
5	MP3.1	=	&EFS1/2	El. Circuit Diagram	4/28/97 2:0	Circuit Diagram	ecfiesel	
6	MP3.1	=	&EFS1/4	El. Circuit Diagram	4/28/97 2:0	Circuit Diagram	ecfiesel	
7	MP3.1			El. Properties	4/28/97 2:0	Electrical Properties	ecfiesel	
8	MP3.1			El. Structure	4/28/97 2:0	Electrical Structure	ecfiesel	
9	MP3.1			Structure	4/28/97 2:0	Structure	ecfiesel	
10	MP3.1			Structure	4/28/97 2:0	Structure	ecfiesel	

Figure 3-17. Editing Aspect Registry Data

Hint: to edit an attribute select cell and press **<F2>**

3.6.2.6 Define Free Designation

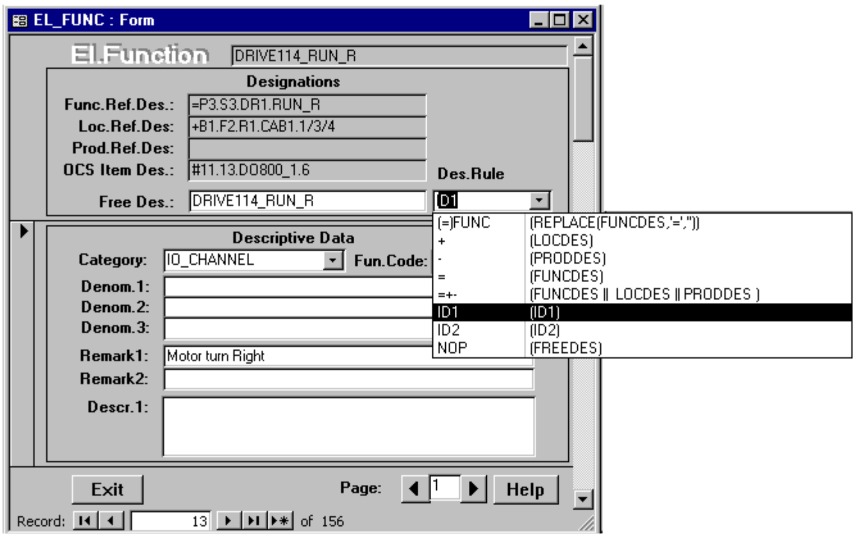
For each electrical plant object a free designation (field **Free Des.**) can be defined. Optionally it can be forced to be unique within project. Depending from aspect type the free designation is used normally in different way:

- El.Cable: is used as free cable number
- El.Function: is used for I/O signals as OCS signal name
- El.Device: can be used for example as free instrument id or mechanical id
- El.Structure: free identifying name related to structure level

The free designation can be created in 2 ways:

- it is entered manually (either via EDIB Dialog or via elMaster Design)
- it is calculated by use of a designation rule.
  According which rule this is build, can be defined individually for each Advant Object on

the related electrical plant object aspect via attribute **Des.Rule**



El.Function: DRIVE114_RUN_R

Func.Ref.Des.: =P3.S3.DR1.RUN_R
Loc.Ref.Des: +B1.F2.R1.CAB1.1/3/4
Prod.Ref.Des:
OCS Item Des.: #11.13.DO800_1.6
Free Des.: DRIVE114_RUN_R
Des.Rule: ID1

(=)FUNC	(REPLACE(FUNCDES,'=',''))
+	(LOCDES)
-	(PRODDES)
=	(FUNCDES)
=+-	(FUNCDES ‖ LOCDES ‖ PRODDES)
ID1	(ID1)
ID2	(ID2)
NOP	(FREEDES)

Category: IO_CHANNEL
Fun.Code:
Denom.1:
Denom.2:
Denom.3:
Remark1: Motor turn Right
Remark2:
Descr.1:

Page: 1
Record: 13 of 156

Figure 3-18. Select rule for free designation calculation on object

Available rules can be selected from list of values (Note: within right column the building rule is shown according Oracle SQL syntax).

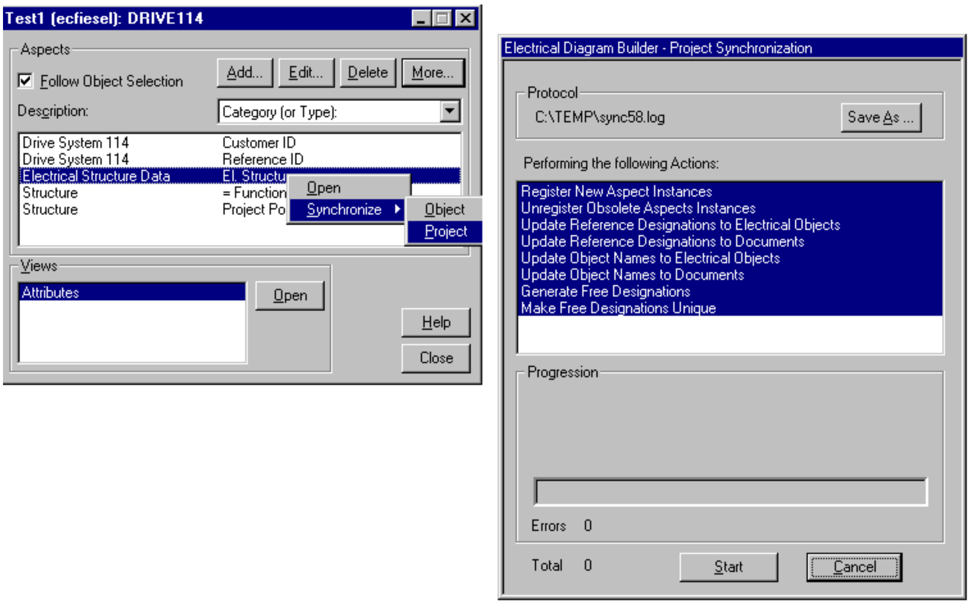
As default rule **ID1** (corresponds to Customer Id) is used to build the identifying designation. The identifying designation is calculated new during synchronization (see next chapter). If it is forced to be unique, a **$** and a running number is added (example: `Motor, Motor$1, Motor$2,....`). But it can also be empty

Note: If the designation rule **`NOP`** is defined, the identifying designation is mapped to itself and must therefore be edited manually to be changed

3.6.2.7 Synchronize Structures and Designations

Structure hierarchies and designations defined via Structure Builder are only updated to CAEE database, if a synchronization is performed on user request.

The synchronization can be called as commands on electrical plant object aspects.



C:\TEMP\sync58.log

Register New Aspect Instances
Unregister Obsolete Aspects Instances
Update Reference Designations to Electrical Objects
Update Reference Designations to Documents
Update Object Names to Electrical Objects
Update Object Names to Documents
Generate Free Designations
Make Free Designations Unique

Figure 3-19. Running Synchronize Project

The command **Synchronize Project** is available only on El.Structure aspects and synchronizes complete CAEE project database. Full synchronization can take some time depending from project size and should be done after major changes like:

- adding lots of Advant Objects/CAEE aspects
- re-arranging structures
- renaming reference designations

So you should complete as much as possible before synchronization whole project, but it must be done, **before** you link diagrams to database, because elMaster Design looks at first for existing objects according designations before creating new objects in the CAEE database.

Synchronization runs in different phases, which can be disabled for a shortened **Synchronize Project**

- **Register New Aspect Instances**
  makes aspects visible within Structure Builder created and registered directly within Electrical Diagram Builder Dialog
- **Unregister Obsolete Aspect Instances**
  removes aspects within Structure Builder which are directly deleted or un-registered within Electrical Diagram Builder Dialog
- **Update Reference Designations to Electrical Objects**
  Updates reference designations from Structure Builder to electrical plant object aspects
- **Update Reference Designations to Documents**
  Updates reference designations to registered document aspects (Circuit diagram, Report,..)
- **Update Object Names to Electrical Objects**

Updates object names defined via Basic Properties aspects to electrical plant object aspects

- **Update Object Names to Electrical Documents**
  Updates object names from electrical objects to document aspects (Circuit diagram, Report,..) registered to same Advant Object
- **Generate Free Designation**
  Generates free designation for registered electrical plant object aspects according selected designation rule
- **Make Free Designation unique**
  forces free designations for registered electrical plant object aspects to unique values

The command **Synchronize Object** runs all synchronization phases, but only for all aspects of one Advant Object.

CAUTION

All parent objects in all object related structures must already be synchronized! So synchronizing single objects is only recommended when adding objects to the lowest structure level.

3.6.3 Parameter Builder Import Operations

Import can be used to create Advant Objects and structures automatically by use of

- an import date file
  the file must be build comma delimited text file, using " "as text qualifier and include field (column) names in first row
- an import rule file
- a project including standardized solutions used as typical/copy patterns

There is a set import rules with extended functionality for CAEE needs.

3.6.3.1 Import general Process Objects

Can be used to create Advant Objects for general purpose including substructures and place them directly within different structures.

There exist 2 alternative import rules, which can be used:

- import rule `caee_obj.csv` uses object names to identify the parent objects
- import rule `caee_obj_ard.csv` uses absolute reference designations (according building rule configured in Structure Builder) to identify the parent objects

Independant from the rule the imported object itself must be unambiguously identified by the `Name` attribute

The following example shows an MS Access table used to create the data file

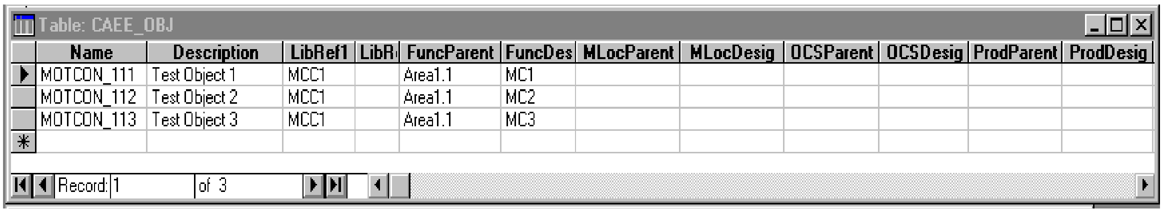
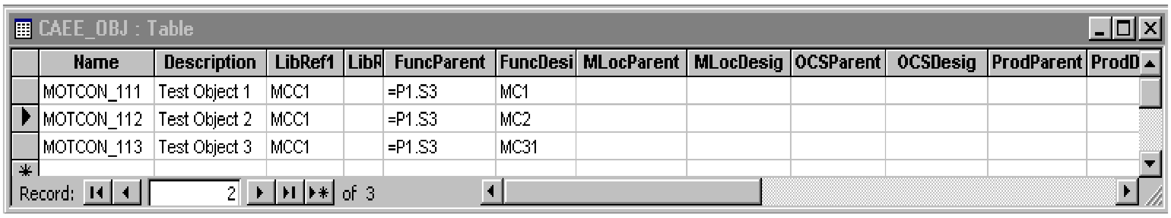


Table: CAEE_OBJ

Name	Description	LibRef1	LibR	FuncParent	FuncDes	MLocParent	MLocDesig	OCSParent	OCSDesig	ProdParent	ProdDesig
MOTCON_111	Test Object 1	MCC1		Area1.1	MC1						
MOTCON_112	Test Object 2	MCC1		Area1.1	MC2						
MOTCON_113	Test Object 3	MCC1		Area1.1	MC3						

Record: 1 of 3

Figure 3-20. Process object import using object names as parent identification



CAEE_OBJ : Table

Name	Description	LibRef1	LibR	FuncParent	FuncDesi	MLocParent	MLocDesig	OCSParent	OCSDesig	ProdParent	ProdD
MOTCON_111	Test Object 1	MCC1		=P1.S3	MC1						
MOTCON_112	Test Object 2	MCC1		=P1.S3	MC2						
MOTCON_113	Test Object 3	MCC1		=P1.S3	MC31						

Record: 2 of 3

Figure 3-21. Process object import using reference desigations as parent identification

The field/column names must be used according following table

Column name	Description
`Name`	Name of Advant Object (must be identifying)
`Description`	Description of Advant Object
`LibRef1`	Reference to Advant Object in library to be copied (inc. substructure)
`LibRef2`	Reference to Advant Object in library to add aspects
`FuncParent`	Name (or reference designation) of parent Advant Object in function structure
`FuncDesig`	Rel.Ref.Des in function structure
`OCSParent`	Name (or reference designation) of parent Advant Object in OCS structure
`OCSDesig`	Rel.Ref.Des in OCS Structure
`ProdParent`	Name (or reference designation) of parent Advant Object in product structure
`ProdDesig`	Rel.Ref.Des in product structure
`MLocParent`	Name (or reference designation) of parent Advant Object in mounting location structure
`MLocDesig`	Rel.Ref.Des in mounting location structure
`<par1..par n>`	Further process object parameters (for more details see Parameter Builder User’s Guide, Appendix A)

Table 3-7. Fields/columns used in CAEE_OBJ/CAEE_OBJ_ARD import

3.6.3.2 Import I/O Boards

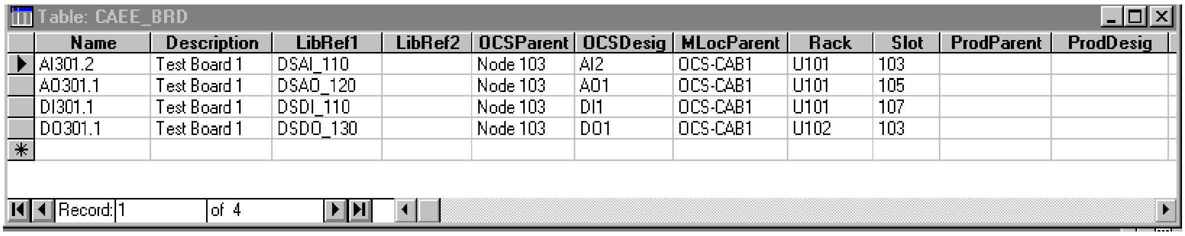
Can be used to create I/O boards and place them directly in OCS and mounting location structure.

There exist 2 alternative import rules, which can be used:

- import rule `caee_brd.csv` uses object names to identify the parent objects
- import rule `caee_brd_ard.csv` uses absolute reference designations (according building rule configured in Structure Builder) to identify the parent objects

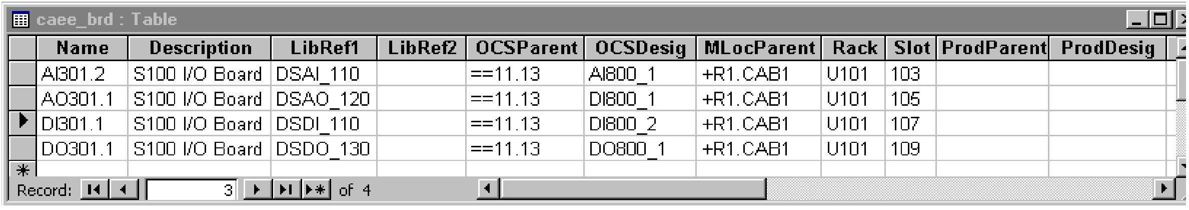
Independant from the rule the imported board itself must be unambiguously identified by the `Name` attribute

The following example shows an MS Access table used to create the data file:



Name	Description	LibRef1	LibRef2	OCSParent	OCSDesig	MLocParent	Rack	Slot	ProdParent	ProdDesig
AI301.2	Test Board 1	DSAI_110		Node 103	AI2	OCS-CAB1	U101	103		
AO301.1	Test Board 1	DSAO_120		Node 103	AO1	OCS-CAB1	U101	105		
DI301.1	Test Board 1	DSDI_110		Node 103	DI1	OCS-CAB1	U101	107		
DO301.1	Test Board 1	DSDO_130		Node 103	DO1	OCS-CAB1	U102	103		

Figure 3-22. I/O board import using object names as parent identification



Name	Description	LibRef1	LibRef2	OCSParent	OCSDesig	MLocParent	Rack	Slot	ProdParent	ProdDesig
AI301.2	S100 I/O Board	DSAI_110		==11.13	AI800_1	+R1.CAB1	U101	103		
AO301.1	S100 I/O Board	DSAO_120		==11.13	DI800_1	+R1.CAB1	U101	105		
DI301.1	S100 I/O Board	DSDI_110		==11.13	DI800_2	+R1.CAB1	U101	107		
DO301.1	S100 I/O Board	DSDO_130		==11.13	DO800_1	+R1.CAB1	U101	109		

Figure 3-23. I/O board import using reference designations as parent identification

The field/column names must be used according following table

Column name	Description
`Name`	Name of Advant Object representing the board
`Description`	Description of Advant Object
`LibRef1`	reference to Advant Object in library to be copied (inc. channels)
`LibRef2`	reference to Advant Object in library to add aspects
`OCSParent`	Name (or reference designation) of parent Advant Object in OCS structure
`OCSDesig`	Rel.Ref.Des in OCS Structure
`ProdParent`	Name (or reference designation) of parent Advant Object in product structure

Table 3-8. Fields/columns used in CAEE_BRD/CAEE_BRD_ARD import

Column name	Description
`ProdDesig`	Rel.Ref.Des in product structure
`MLocParent`	Name (or reference designation) of grand-parent (cabinet) EO in mounting location structure
`Rack`	Rel.Ref.Des of rack Advant Object within cabinet
`Slot`	Rel.Ref.Des of slot Advant Object within rack
`<par1..par n>`	Further board parameters (for more details see Parameter Builder User's Guide, Appendix A)

Table 3-8. Fields/columns used in CAEE_BRD/CAEE_BRD_ARD import

3.6.3.3 Import Signal Lists

Can be used to create I/O signals and place them directly in function oriented and OCS structure.

There exist 2 alternative import rules, which can be used:

- import rule `caee_sig.csv` uses object names to identify the parent objects
- import rule `caee_sig_ard.csv` uses absolute reference designations (according building rule configured in Structure Builder) to identify the parent objects

Independant from the rule the imported signal itself must unambiguously be identified by the `Name` attribute

The following example shows an MS Access table used to create the data file:

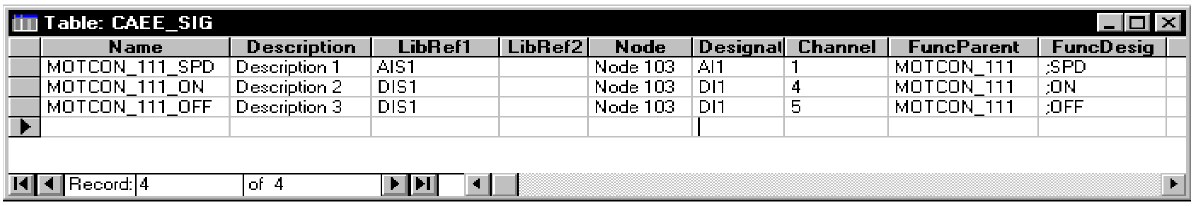
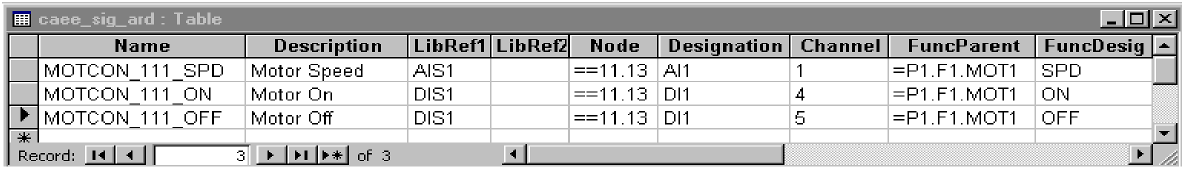


Table: CAEE_SIG

Name	Description	LibRef1	LibRef2	Node	Designat	Channel	FuncParent	FuncDesig
MOTCON_111_SPD	Description 1	AIS1		Node 103	AI1	1	MOTCON_111	;SPD
MOTCON_111_ON	Description 2	DIS1		Node 103	DI1	4	MOTCON_111	;ON
MOTCON_111_OFF	Description 3	DIS1		Node 103	DI1	5	MOTCON_111	;OFF

Record: 4 of 4

Figure 3-24. I/O signal import using object names as parent identification



caee_sig_ard : Table

Name	Description	LibRef1	LibRef2	Node	Designation	Channel	FuncParent	FuncDesig
MOTCON_111_SPD	Motor Speed	AIS1		==11.13	AI1	1	=P1.F1.MOT1	SPD
MOTCON_111_ON	Motor On	DIS1		==11.13	DI1	4	=P1.F1.MOT1	ON
MOTCON_111_OFF	Motor Off	DIS1		==11.13	DI1	5	=P1.F1.MOT1	OFF

Record: 3 of 3

Figure 3-25. I/O signal import using reference designations as parent identification

The field/column names must be used according following table

Column name	Description
`Name`	Name of Signal Advant Object
`Description`	Description of Signal Advant Object
`LibRef1`	reference to signal Advant Object in library to be copied
`LibRef2`	reference to signal Advant Object in library to add aspects
`Node`	Name (or reference designation) of Node Advant Object in OCS structure
`Designation`	Rel.Ref.Des in OCS Structure
`Channel`	Channel number (Rel.Ref.Des of channel EO)
`FuncParent`	Name (or reference designation) of parent Advant Object in function structure
`FuncDesig`	Rel.Ref.Des of signal object in function structure
`<par1..par n>`	Further signal parameters (for more details see Parameter Builder User's Guide, Appendix A)

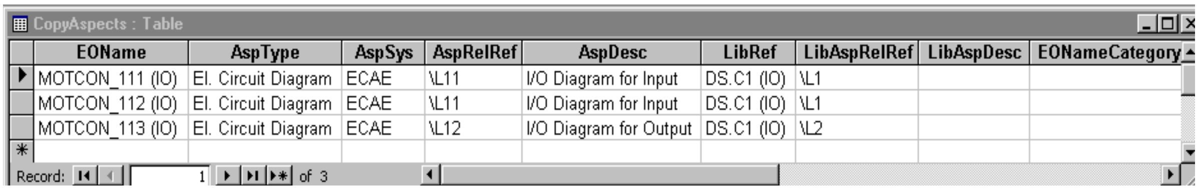
Table 3-9. Fields/columns used in CAEE_SIG/CAEE_SIG_ARD import

3.6.3.4 Import single aspects (copy aspects)

Can be used to add single aspect to existing Advant Objects.Adding aspects is based on copying existing aspects and adapting attributes.

The import rule is defined in file `aspects.csv`

The following example shows an MS Access table used to create the data file:



EOName	AspType	AspSys	AspRelRef	AspDesc	LibRef	LibAspRelRef	LibAspDesc	EONameCategory
MOTCON_111 (IO)	El. Circuit Diagram	ECAE	\L11	I/O Diagram for Input	DS.C1 (IO)	\L1		
MOTCON_112 (IO)	El. Circuit Diagram	ECAE	\L11	I/O Diagram for Input	DS.C1 (IO)	\L1		
MOTCON_113 (IO)	El. Circuit Diagram	ECAE	\L12	I/O Diagram for Output	DS.C1 (IO)	\L2		

Figure 3-26. Importing circuit diagrams by copying aspect

The field/column names must be used according following table

Column name	Description
`EOName`	Name of Signal Advant Object
`EONameCategory`	Category of EOName, default (if empty) is *Customer ID*
`AspType`	Type of aspect (as shown in Structure Builder)
`AspSys`	Shortname of aspect system (is ECAE for Electrical Diagram Builder)
`AspDesc`	Aspect description to be set for new created aspec (is used also to re-identify aspect within later imports, if `LibAspDesc` is set)
`AspRelRef`	Aspect relative reference designation to be set for new created aspect (is used also to re-identify aspect within later imports, if `LibAspRelRef` is set)
`Libref`	reference to Advant Object in library, from where aspect to be copied

`LibAspDesc`
`or`
`LibAspRelRef`
	Aspect description of source aspect within referenced library object
	Aspect relative reference designation of source aspect within referenced library object
	(must be used only alternatively, other attribute must be empty)

Table 3-10. Fields/columns used in ASPECTS import

3.6.4 Electrical Diagram Builder Dialog Operations

3.6.4.1 Selecting and Editing Aspects for electrical Plant Objects

Aspects for electrical plant objects are those type of aspects, which can be connected/linked to symbols in diagrams and therefore exchange data between database and symbols in diagrams. Those are aspects of type:

- **El.Structure:**
  for any object representing a structure level (plant area, location area,..) or objects not relevant for electrical engineering (mechanical equipment,..). It can have articles as accessories assigned
  Restrictions: it's assumed, that no main article needs to be assigned
- **El.Device**
  for any electrical device. It can have a main article assigned and additional accessories
- **El.Function**
  for channels and signals
  Restrictions: it's assumed, that no articles need to be referenced
- **El.Cable**
  for electrical cables
  Restrictions: it's assumed, that the terminal list editor needs not to be called for cables

Following dialog controls are relevant:

- Designations
  - Reference Designations
    can/need not to be edited here. Are either automatically set via synchronization or are edited via elMaster products
  - **Free Des**.: can be edited manually. But it is re-calculated for registered aspects during synchronization, if a valid designation rule is selected
- Descriptive data
  - **Category:** for classification of plant objects. Is used internally for symbol mapping and article selection purpose.
  - **....Code**: for presetting type of article to be used
  - **Denom1...3:** for descriptive denomination of the plant object
  - **Remark 1..2:** recommended for technical data of the plant object, is updated into diagrams, if symbol has corresponding remark attributes
  - **Descr 1:** for long text description. For cables it can be used for cable route information
- Free Data
  for free use
  Note: attributes may get specific meaning in future depending from category
- Article Data (only for el.Device and el.Cable aspects)
  Show data of referenced main article. It are read only, but can be used for filtering

3.6.4.2 Selecting and referencing Articles

Browsing for Articles

For browsing the article library select **Articles | Lookup** from dialog related toolbar.

This opens the Article Navigation dialog (see Section 3.7.2.6, Article Navigation Dialog) and the corresponding article dialog.

The default selection is set to the category and code of the selected aspect. If you look for article of other categories, you have to adapt the selection/filter criteria within Article Navigation dialog and press **Apply to Selection**

Referencing Articles

To create an article reference perform following steps:

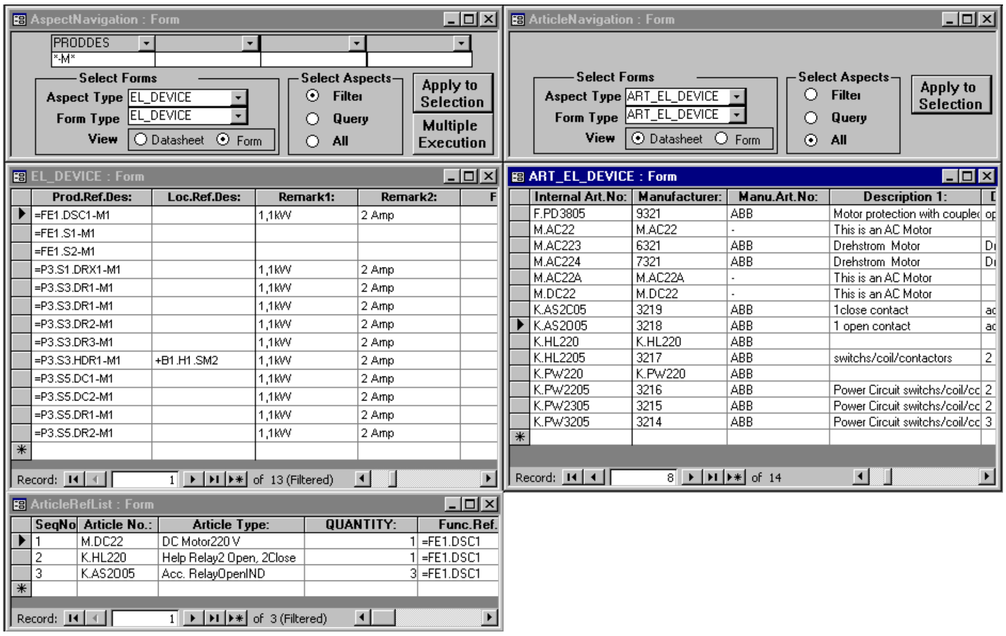
- select the article you want to reference by pressing the corresponding record selector (see MS Access help)
- select the aspect which shall get the article reference also by pressing the corresponding record selector (now the toolbar again appears)
- select from **Articles** pull down menu on toolbar depending what you want to do
  - **Refer.Article**: creates a reference for a main article
  - **Remap Article**: deletes main article reference and creates new
  - **Add Accessory**: creates an article reference for an accessory. Accessories can not be linked to symbols, there will be created no terminals from articles referenced as accessories

Viewing and editing Article References

Article references can be viewed and edited within the article reference list. Therefore select corresponding aspect for a plant object and select **Open | Article Reference** from toolbar. Now the Article Reference dialog comes up show article references of the selected aspect. Following editing possibilities are available:

- the quantity of article can be edited within **Quantity** column

- article references can be deleted by selecting row and pressing **<Delete>** key



AspectNavigation : Form

PRODDES
-M

Aspect Type: EL_DEVICE
Form Type: EL_DEVICE
View: ○ Datasheet ● Form

● Filter
○ Query
○ All

EL_DEVICE : Form

Prod.Ref.Des:	Loc.Ref.Des:	Remark1:	Remark2:	F
=FE1.DSC1-M1		1,1kW	2 Amp	
=FE1.S1-M1				
=FE1.S2-M1				
=P3.S1.DRX1-M1		1,1kW	2 Amp	
=P3.S3.DR1-M1		1,1kW	2 Amp	
=P3.S3.DR1-M1		1,1kW	2 Amp	
=P3.S3.DR2-M1		1,1kW	2 Amp	
=P3.S3.DR3-M1		1,1kW	2 Amp	
=P3.S3.HDR1-M1	+B1.H1.SM2	1,1kW	2 Amp	
=P3.S5.DC1-M1		1,1kW	2 Amp	
=P3.S5.DC2-M1		1,1kW	2 Amp	
=P3.S5.DR1-M1		1,1kW	2 Amp	
=P3.S5.DR2-M1		1,1kW	2 Amp	

Record: 1 of 13 (Filtered)

ArticleRefList : Form

SeqNo	Article No.:	Article Type:	QUANTITY:	Func.Ref.
1	M.DC22	DC Motor220 V	1	=FE1.DSC1
2	K.HL220	Help Relay2 Open, 2Close	1	=FE1.DSC1
3	K.AS2005	Acc. RelayOpenIND	3	=FE1.DSC1

Record: 1 of 3 (Filtered)

ArticleNavigation : Form

Aspect Type: ART_EL_DEVICE
Form Type: ART_EL_DEVICE
View: ● Datasheet ○ Form

○ Filter
○ Query
● All

ART_EL_DEVICE : Form

Internal Art.No:	Manufacturer:	Manu.Art.No:	Description 1:	
F.PD3805	9321	ABB	Motor protection with couplec	op
M.AC22	M.AC22	-	This is an AC Motor	
M.AC223	6321	ABB	Drehstrom Motor	Di
M.AC224	7321	ABB	Drehstrom Motor	Di
M.AC22A	M.AC22A	-	This is an AC Motor	
M.DC22	M.DC22	-	This is an AC Motor	
K.AS2C05	3219	ABB	1close contact	ac
K.AS2005	3218	ABB	1 open contact	ac
K.HL220	K.HL220	ABB		
K.HL2205	3217	ABB	switchs/coil/contactors	2
K.PW220	K.PW220	ABB		
K.PW2205	3216	ABB	Power Circuit switchs/coil/cc	2
K.PW2305	3215	ABB	Power Circuit switchs/coil/cc	2
K.PW3205	3214	ABB	Power Circuit switchs/coil/cc	3

Record: 8 of 14

Figure 3-27. Lookup for articles and article references

Note: the Article Ref.List items follow automatically the selected aspect

3.6.4.3 Editing Terminals

Editing terminal numbers/designations can be done within Terminal List Dialog.

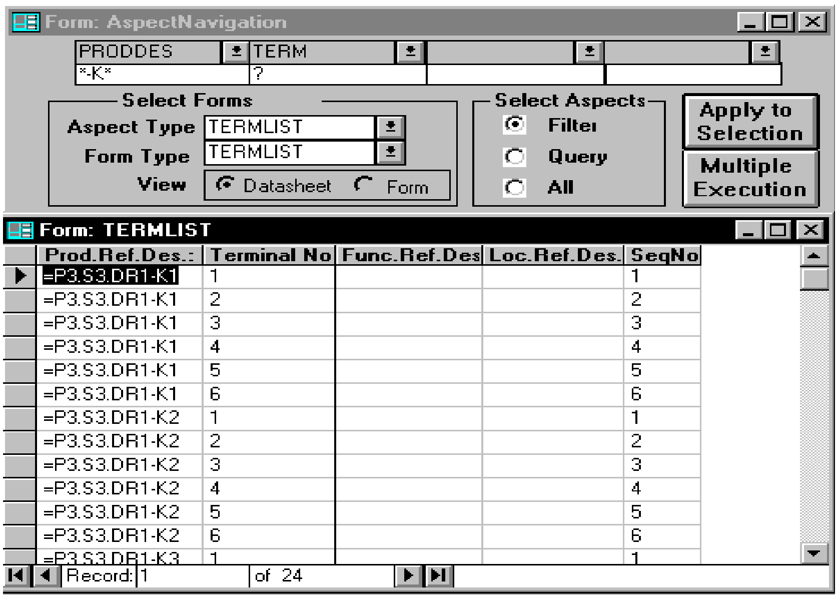
Editing Terminals for a single plant object

- Select the corresponding aspect
- Select **Open | Terminal List** from toolbar

Note: the terminal list items follow automatically the selected aspect

Editing Terminals for multiple plant objects

- Select **Terminal List** as aspect in **Aspect Navigation** dialog
- Enter filter criteria and press **Apply to Selection**



Form: AspectNavigation

PRODDES	TERM		
-K	?		

Select Forms

Aspect Type: TERMLIST

Form Type: TERMLIST

View: ● Datasheet ○ Form

Select Aspects: ● Filter ○ Query ○ All

Form: TERMLIST

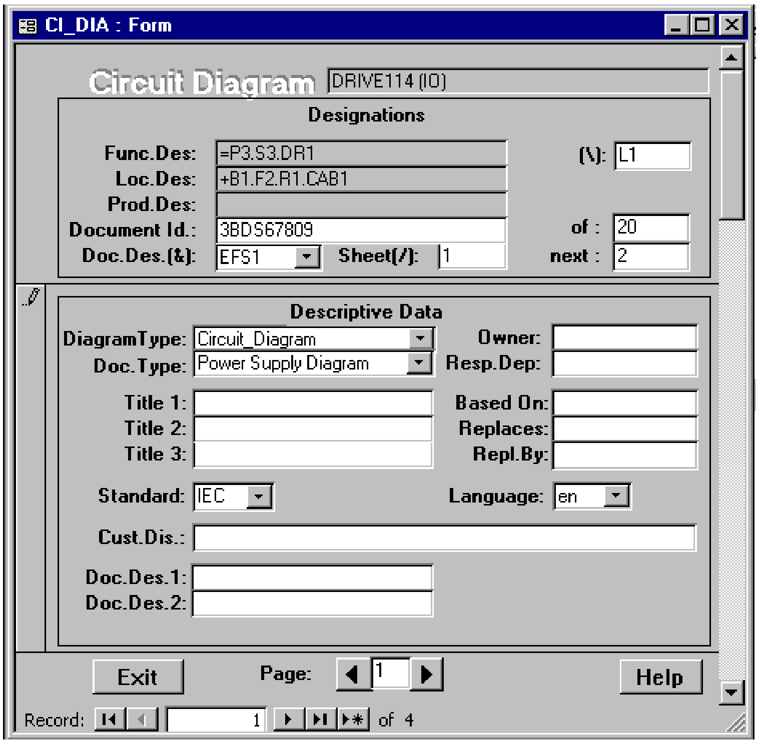
Prod.Ref.Des.:	Terminal No	Func.Ref.Des	Loc.Ref.Des.	SeqNo
=P3.S3.DR1-K1	1			1
=P3.S3.DR1-K1	2			2
=P3.S3.DR1-K1	3			3
=P3.S3.DR1-K1	4			4
=P3.S3.DR1-K1	5			5
=P3.S3.DR1-K1	6			6
=P3.S3.DR1-K2	1			1
=P3.S3.DR1-K2	2			2
=P3.S3.DR1-K2	3			3
=P3.S3.DR1-K2	4			4
=P3.S3.DR1-K2	5			5
=P3.S3.DR1-K2	6			6
=P3.S3.DR1-K3	1			1

Record: 1 of 24

Figure 3-28. Editing terminals in Terminal List dialog

- Adapt terminal number in column **Terminal No**. to your needs

3.6.4.4 Editing Circuit Diagram Aspects



Circuit Diagram: DRIVE114 (IO)
Func.Des: =P3.S3.DR1
Loc.Des: +B1.F2.R1.CAB1
Document Id.: 3BDS67809
Doc.Des.(&): EFS1
Sheet(/): 1
(\): L1
of : 20
next : 2
DiagramType: Circuit_Diagram
Doc.Type: Power Supply Diagram
Standard: IEC
Language: en
Page: 1
Record: 1 of 4

Figure 3-29. Editing circuit diagram aspects

Editing Designation

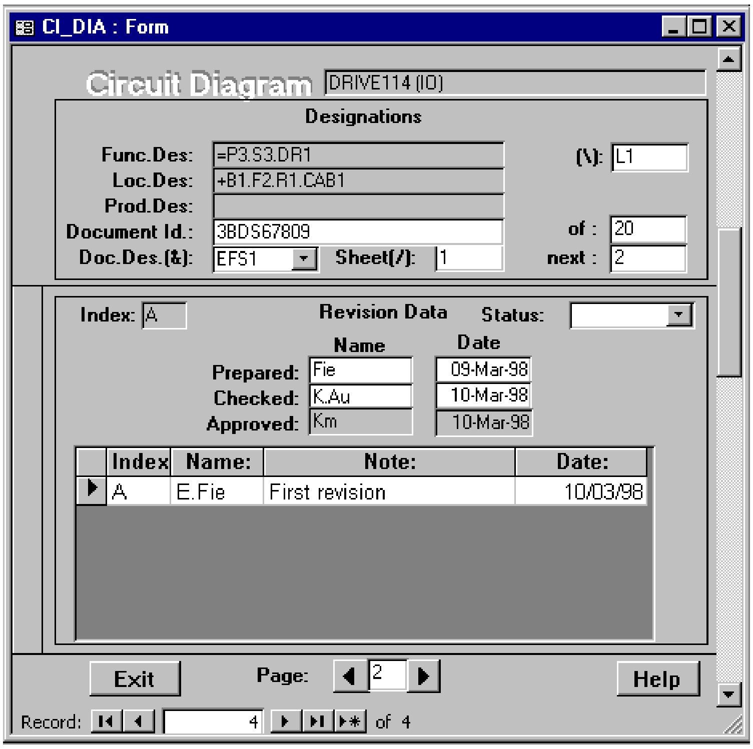
- Reference designations can not be edited in this dialog. It are set:
  - within synchronize for diagram aspects registered to an Advant Object, which includes also an el. plant object aspect
  - manually via toolbar item **SetCommon Des**. for all other diagrams, if it are already saved to database
- the combination of **Document Id** and **Sheet No** must be unique for proper working of cross referencing

Editing Descriptive Data

- can be edited manually

Editing Revision Data

- Prepared and checked data can be edited manually
- Approved/Revision list data can only be edited via elMaster Project



Circuit Diagram: DRIVE114 (IO)

Func.Des: =P3.S3.DR1
Loc.Des: +B1.F2.R1.CAB1
Prod.Des:
Document Id.: 3BDS67809
Doc.Des.(&): EFS1
Sheet(/): 1
(\): L1
of : 20
next : 2

Index: A
Status:

	Name	Date
Prepared:	Fie	09-Mar-98
Checked:	K.Au	10-Mar-98
Approved:	Km	10-Mar-98

Index	Name:	Note:	Date:
A	E.Fie	First revision	10/03/98

Page: 2

Record: 4 of 4

Figure 3-30. Handling of revision data

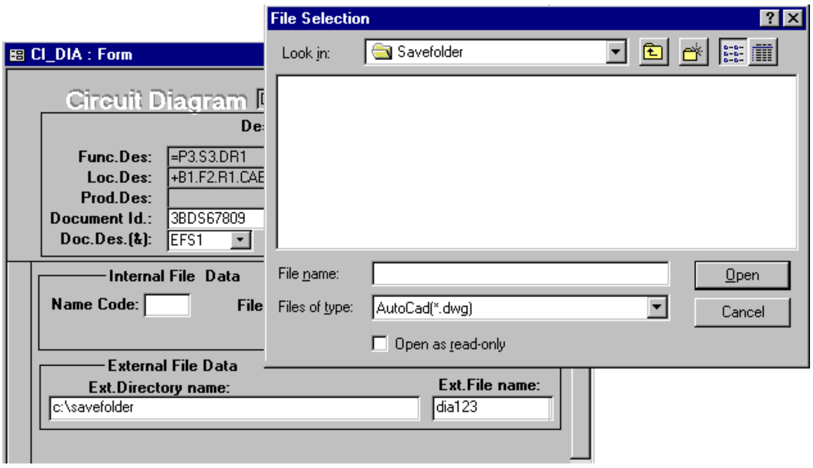
3.6.4.5 Handling of Drawing Files

Editing Internal File Data

- if **Name Code** is set before diagram file is created, the filename will be created by name code value and a running number. Can be used to categorize drawing files
- if **File Name** is edited, the corresponding file on file system is also renamed (if already existing)

Editing External File Data

- **Ext. Directory name/ Ext. File Name** is used is file name reference within attach/detach drawing files
  Note: to browse for file/directory names, double click on the corresponding field



Func.Des: =P3.S3.DR1
Loc.Des: +B1.F2.R1.CAE
Prod.Des:
Document Id.: 3BDS67809
Doc.Des.(&): EFS1
Ext.Directory name: c:\savefolder
Ext.File name: dia123

Look in: Savefolder
File name:
Files of type: AutoCad(*.dwg)
☐ Open as read-only

Figure 3-31. Referencing to external files

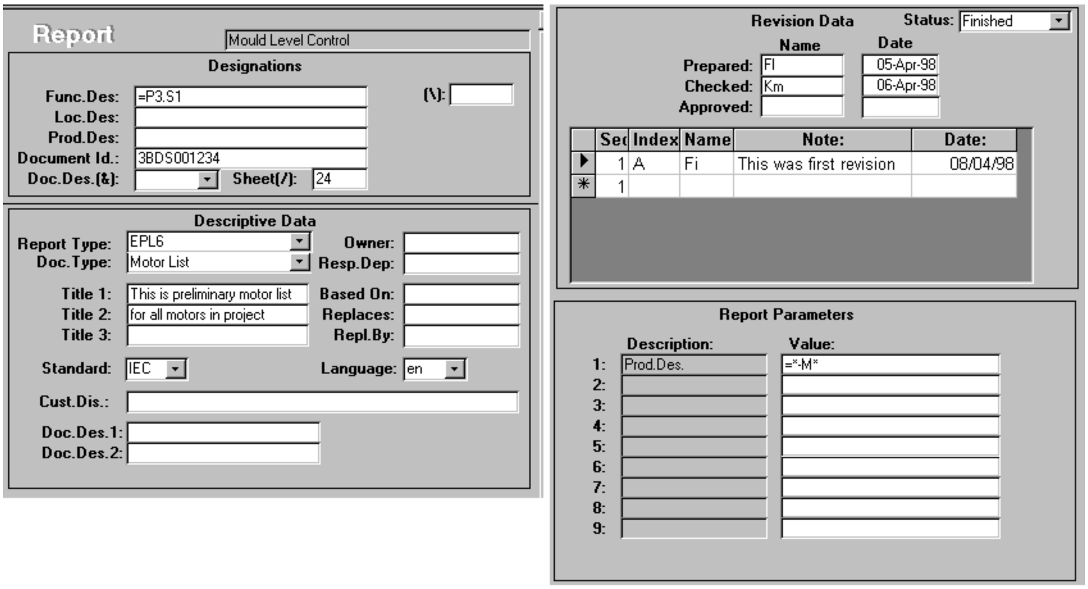
File Handling | Attach/ Detach

- Attach takes drawing file referenced via external file data and adds it to diagram aspect (existing file will be replaced)
- Detach writes drawing file related to diagram aspect to referenced file

Note: the **Attach/ Detach** functions can also be done via **Multiple Execution** dialog on a list of selected diagrams

File Handling | Attach by Select
calls the file selection dialog and attaches a copy of selected file directly to the corresponding diagram aspect

3.6.4.6 Editing Report Aspects



Report
Mould Level Control

Designations

Func.Des: =P3.S1
Loc.Des:
Prod.Des:
Document Id.: 3BDS001234
Doc.Des.(&):
Sheet(/): 24
(\):

Descriptive Data

Report Type: EPL6
Doc.Type: Motor List
Title 1: This is preliminary motor list
Title 2: for all motors in project
Title 3:
Owner:
Resp.Dep:
Based On:
Replaces:
Repl.By:
Standard: IEC
Language: en
Cust.Dis.:
Doc.Des.1:
Doc.Des.2:

Revision Data

Status: Finished

	Name	Date
Prepared:	Fl	05-Apr-98
Checked:	Km	06-Apr-98
Approved:		

	Sec	Index	Name	Note:	Date:
▶	1	A	Fi	This was first revision	08/04/98
*	1				

Report Parameters

	Description:	Value:
1:	Prod.Des.	=*-M*
2:		
3:		
4:		
5:		
6:		
7:		
8:		
9:		

Figure 3-32. Editing report aspect data

Editing Designation

- Reference designations are set within synchronize for report aspects registered to an Advant Object, which includes also an el. plant object aspect.
- Reference designations must be edited manually for report aspects registered to an Advant Object, which include not an el. plant object aspect

Editing Sheet Number

If there is given a sheet number within **Sheet(/)** field, this can be included as common sheet number within report and extended by a running page number.

Example: if a sheet number 24 is given, the sheets of a report with 4 pages will be numbered 24.1, 24.2, 24.3 and 24.4

Editing Descriptive data

- **Report Type:**
  available report types (see Section 3.6.4.8, Editing/Adding Report Types) can be selected from list of values
- other descriptive data can be edited according users needs and will be used within report footer

Editing Revision Data

All revision data (also revision history) can be edited

Editing Report Parameters

Report parameters are normally used within selection criteria defined within referenced report type. Wildcards can be used according MS Access/Oracle conventions

3.6.4.7 Print Reports

NOTE

Before you print reports within Electrical Diagram Builder Dialog, you must have adapted your printer configuration according descriptions in Section 3.1.3.9, Printer Configuration for EDIB Reports

Preview/Print reports

To preview the report select the corresponding report aspect and select **Print | Preview** from report toolbar.

To print directly a report select the corresponding report aspect and select **Print | Report** from report toolbar.

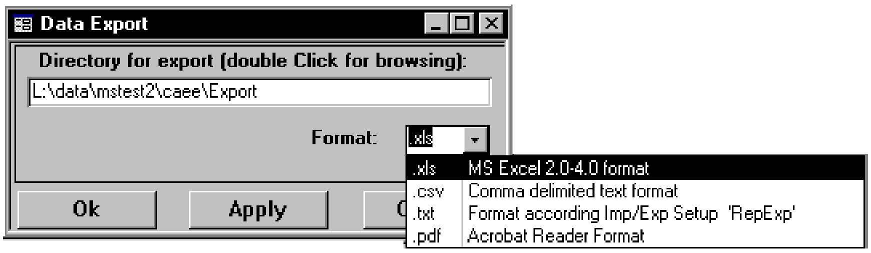
To print a report to file resp. export report data to file select the corresponding report aspect and select **Print | to File** from report toolbar.
Note: to which file location and in which format it is printed depends from settings according **Print to File/Export Setup**

You can print a list of report by use of **Multiple Execution** dialog

Write Report data to file

To write the data included in report to file, you can choose 2 variants:

- use standard MS Access mechanisms for single reports.
  Therefore perform **Print Preview** and selected report aspect and select **Output To** from **File** menu
- use **Print to File** function available on report aspects. Therefore do following steps:
  - click the toolbar button **Print to file/Export Setup**
  - define directory to create the print/export files and select format
    Note: the file name(s) itself will be generated by use of the report aspect internal key (can be displayed in datasheet view, eventually unhide column first if not visible)



Directory for export (double Click for browsing): L:\data\mstest2\caee\Export

Format: .xls

.xls	MS Excel 2.0-4.0 format
.csv	Comma delimited text format
.txt	Format according Imp/Exp Setup 'RepExp'
.pdf	Acrobat Reader Format

Figure 3-33. Selecting properties for report data export

Note: Printing in .pdf format requires, that the Acrobat Writer is installed on corresponding client machine. Printer configurations for .pdf format can be adapted on MS Access report **A3L_PDFWriter**

3.6.4.8 Editing/Adding Report Types

A report type consists of

- a reference to an existing MS Access report
- report parameter definitions (up to 9)
- a WHERE and ORDER BY clause to select the scope of data included within the individual report. The defined report parameters should be included within this clause.

To edit/add report types open **Report Type** dialog by use of toolbar button **Open | ReportType**

Available MS Access report can be selected from list of values on **Report Name** field. Standard reports included as examples within Electrical Diagram Builder Dialog ar listed in the following table.

Table 3-11. List of standard MS Access reports included as examples

Report Name	Description	Data Source
A3L_CL1	List of Cables	CABLELIST
A3L_CS1	Summary Cable list	CABLELISTSUM
A3L_PL1	All references between electrical objects and articles (main and accessories) incl. object designations and article data	USYSARTLIST
A3L_PL2	All electrical objects including - article data for main articles - accessory references - diagram references (Note: diagram references can be adapted to DIN representation within query PARTSLISTREF)	PARTSLISTREF
A3L_PS1	Summary Parts list, Filter criteria for product reference designation can be given via parameter 1 (coded in query PARTSLISTSEL)	PARTSLISTSELSUM
A3L_PS2	Summary Parts list for whole project	PARTSLISTSUM

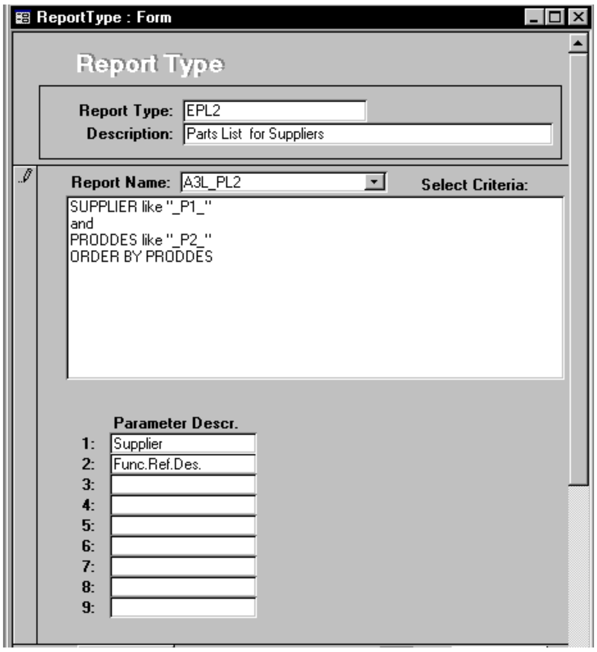
Following design principles should be considered when adapting/adding reports:

- the report record source (table/query the report is based on) must corresponds to kind of data shown in report (see datasource column in table before)
- the attributes used within report are included all in the record source definition of the MS

Access report
Note: avoid using sub-reports (exception: footer), because those data will not be included in exported data.

- the title block (footer) is included as sub report (naming convention: `<format>_FOOTER`)
  Example: A3L_FOOTER

Report parameters can be used within **Select Criteria** field according syntax `_P1_ ... _P9_`. Furthermore the select criteria has to follow the rules for `WHERE` conditions and ORDER BY rules within MS Access SQL select statements. .



Report Type: EPL2
Description: Parts List for Suppliers
Report Name: A3L_PL2
Select Criteria:

```
SUPPLIER like "_P1_"
and
PRODDES like "_P2_"
ORDER BY PRODDES
```

Parameter Descr.
1: Supplier
2: Func.Ref.Des.
3:
4:
5:
6:
7:
8:
9:

Figure 3-34. Example for select criteria and report parameter usage

Design considerations:

When the report type is used by a report aspect to produce a report or to export data to file, as record source will be used just the record source string included in referenced MS Access report extended by the string defined by **Select Criteria** (having at first replaced the parts defined as parameters)

3.6.4.9 Use of Copy Special

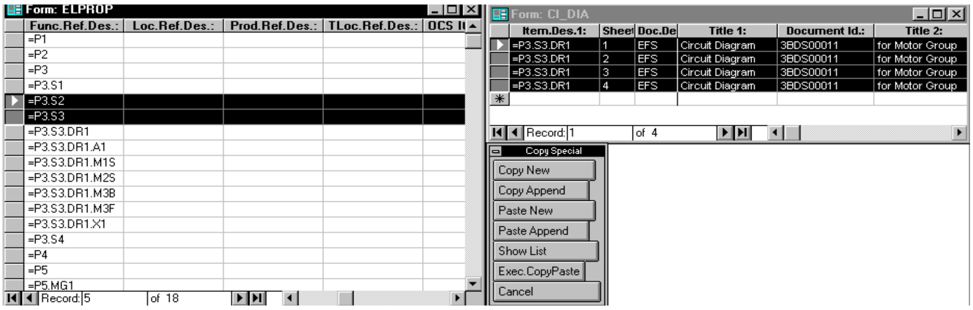
Copy special can be used to copy multiple aspects to multiple Advant Objects.

Therefore do following steps:

- select **Copy Special** from aspect toolbar
- select aspects (normally diagrams) within datasheet to be copied and press **Copy New**
- select el.plant object aspects (as representatives for Advant Objects) to be copied to and press **Paste New**

- perform copying by pressing **Exec Copy/Paste**

Now an internal copy/paste job list is processed to perform the copies of aspects



Func.Ref.Des.:	Loc.Ref.Des.:	Prod.Ref.Des.:	TLoc.Ref.Des.:	OCS I
=P1				
=P2				
=P3				
=P3.S1				
=P3.S2				
=P3.S3				
=P3.S3.DR1				
=P3.S3.DR1.A1				
=P3.S3.DR1.M1S				
=P3.S3.DR1.M2S				
=P3.S3.DR1.M3B				
=P3.S3.DR1.M3F				
=P3.S3.DR1.X1				
=P3.S4				
=P4				
=P5				
=P5.MG1				

Record: 5 of 18

Item.Des.1:	Sheet	Doc.De	Title 1:	Document Id.:	Title 2:
=P3.S3.DR1	1	EFS	Circuit Diagram	3BDS00011	for Motor Group
=P3.S3.DR1	2	EFS	Circuit Diagram	3BDS00011	for Motor Group
=P3.S3.DR1	3	EFS	Circuit Diagram	3BDS00011	for Motor Group
=P3.S3.DR1	4	EFS	Circuit Diagram	3BDS00011	for Motor Group

Record: 1 of 4

Figure 3-35. Multiple copy of aspects via Copy Special

3.6.4.10 Use of Register Aspects

Register aspects is mainly relevant for diagram aspects created from elMaster Project (manually or by importing them from directory)

To register those diagram aspects later to existing Advant Objects you can use the **Register Aspect** function

Therefore do following steps

- make sure, that diagrams are saved to database
- perform **SetCommonDes.** to get common item designation (from internal “document to object” relationships) and update them to reference designation attributes of diagram aspects
- make sure, that Advant Object exists with corresponding reference designation set and having an el.plant object aspect
- run **Register** function (by toolbar button or via Multiple Execution) to register diagram aspects to Advant Object with corresponding reference designation set

3.6.4.11 Create Copies of Dialogs

Sometimes it is helpful to create a copy of an aspect dialog

- If you want to have a form and datasheet view on same aspect type in parallel
- If you want to have different variants of datasheet column configurations in parallel (see MS Access Help)

So you can just select an opened dialog, select **Save Form As** from **File** menu, enter the new form name and press **OK** button.

Then you can later open the new form from Aspect- resp. Article Navigation dialog (Be aware that you have to type in the name of the new created form manually!).

3.6.4.12 Use of Aspect Navigation Dialog

The Aspect Navigation dialog allows selection of aspects and open dialogs on aspects directly within Electrical Diagram Builder Dialog application

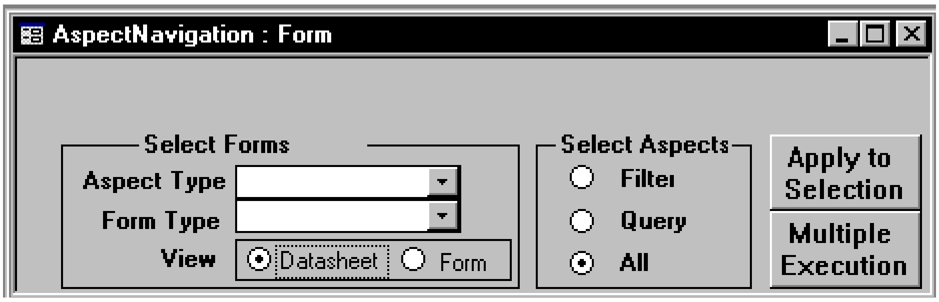
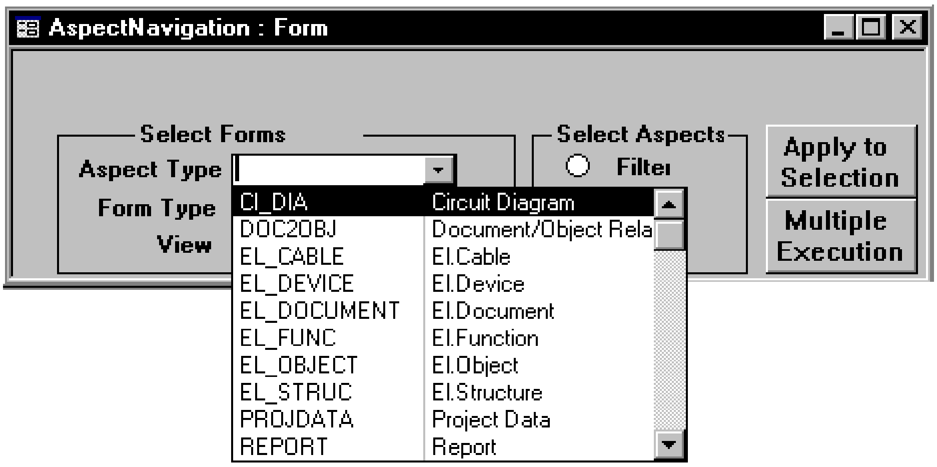


Figure 3-36. Aspect Navigation dialog

Dialog Controls

Aspect Type
defines the aspect type, for which dialog shall be opened in form or datasheet view.

To open an dialog on aspects, select the aspect type and the desired view and press the **Apply to Selection** button



CI_DIA	Circuit Diagram
DOC2OBJ	Document/Object Rela
EL_CABLE	El.Cable
EL_DEVICE	El.Device
EL_DOCUMENT	El.Document
EL_FUNC	El.Function
EL_OBJECT	El.Object
EL_STRUC	El.Structure
PROJDATA	Project Data
REPORT	Report

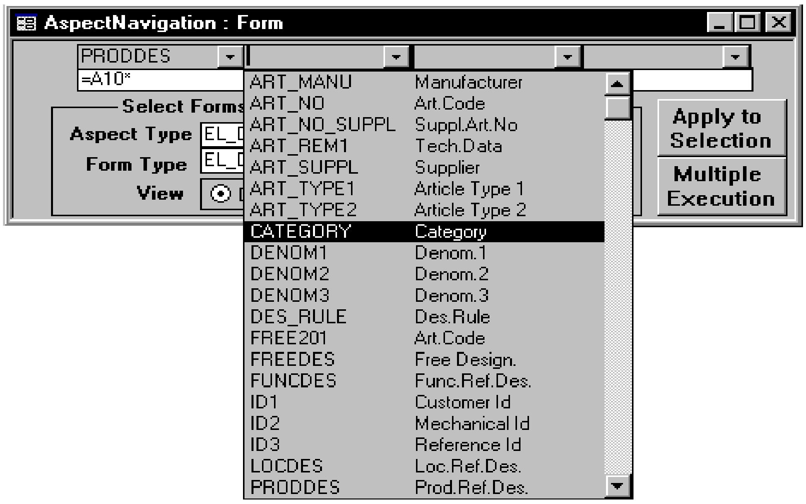
Figure 3-37. Selecting aspect types in Aspect Navigation dialog

As default, all aspects of the selected type are listed.

NOTE

The term "Aspect Type" in this context is not restricted only to those types, which can be used as aspects within Advant Objects. It is extended here also to other kind of data or views on database information, which is of interest for the user.

It is possible to filter on attributes selected by the user. For this purpose select **Filter** within **Select Aspects** selection box and select the attributes to be used as filter criteria and enter the filter criteria values.



Aspect Type EL_
Form Type EL_
View ●

PRODDES
=A10*

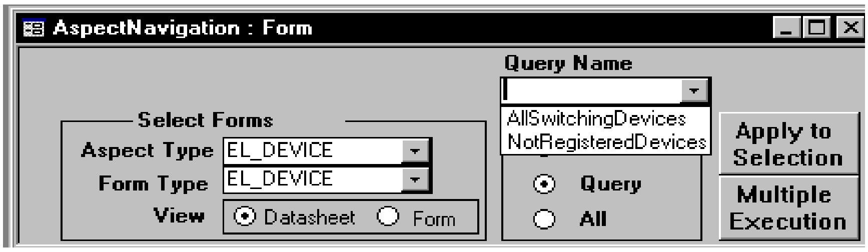
ART_MANU	Manufacturer
ART_NO	Art.Code
ART_NO_SUPPL	Suppl.Art.No
ART_REM1	Tech.Data
ART_SUPPL	Supplier
ART_TYPE1	Article Type 1
ART_TYPE2	Article Type 2
CATEGORY	Category
DENOM1	Denom.1
DENOM2	Denom.2
DENOM3	Denom.3
DES_RULE	Des.Rule
FREE201	Art.Code
FREEDES	Free Design.
FUNCDES	Func.Ref.Des.
ID1	Customer Id
ID2	Mechanical Id
ID3	Reference Id
LOCDES	Loc.Ref.Des.
PRODDES	Prod.Ref.Des.

Figure 3-38. Selecting aspect attributes for filtering purpose

Following conventions are used for filtering:

- * is used as wildcard for zero or more characters
- ? is used as wildcard for exactly one character
- an empty field for an attribute is used for a NULL value or zero string. So you can filter also for aspects, which have no value defined for a certain attribute.
- the selected aspects are sorted according the sequence, in which the filter attributes are given from left to right

Additionally it is possible to use user defined MS Access Queries for complicated and/or often used selections.



Query Name
AllSwitchingDevices
NotRegisteredDevices

Aspect Type EL_DEVICE
Form Type EL_DEVICE
View ● Datasheet ○ Form

● Query
○ All

Figure 3-39. Selecting user defined queries within Aspect Navigation

To define new queries, perform following steps:

1. Open the dialog for the aspect (form or datasheet view), on which you want to define the query (use **Apply to Selection** in Aspect Navigation dialog, you should define some filter criteria to get an initial filter criteria)
Note: you should close the aspect dialog before and open it new to get a proper setup)

2. Choose **Records | Filter | Advanced Filter/Sort..** from MS Access menu
3. define your selection criteria (for details see MS Access Help "Creating Filters")
4. if you are ready, choose **File | Save as Query** from MS Access menu and define the query name. Choose speaking names for easy understanding, what the query is used for

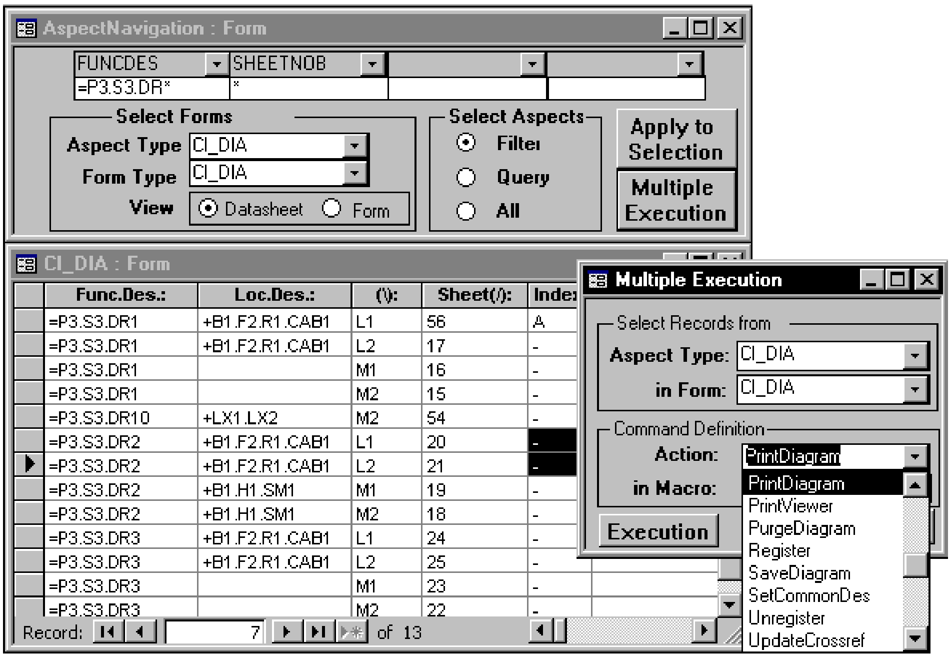
A query is automatically included in the selection list for query names, if it is based directly on the aspect table. If for example a join with other tables is defined within the query, the query name will not be included in the selection list, but can be typed in manually into the **Query Name** field

3.6.4.13 Use of Multiple Execution

Multiple Execution can be used to perform a command defined as macro action on a list of selected aspects.
Note: all commands/functions available within the aspect toolbars are implemented as macro actions and can therefore be performed in this way.

The list of selected aspects corresponds to those aspect, which actually are listed in an opened aspect dialog. For selecting aspects, see Chapter 3.6.4.12, Use of Aspect Navigation Dialog

To call the Multiple Execution Dialog, press **Multiple Execution** button in Aspect Navigation dialog.



FUNCDES	SHEETNOB		
=P3.S3.DR*	*		

Aspect Type: CI_DIA
Form Type: CI_DIA
View: ● Datasheet ○ Form

● Filter
○ Query
○ All

Func.Des.:	Loc.Des.:	(\):	Sheet(/):	Inde
=P3.S3.DR1	+B1.F2.R1.CAB1	L1	56	A
=P3.S3.DR1	+B1.F2.R1.CAB1	L2	17	-
=P3.S3.DR1		M1	16	-
=P3.S3.DR1		M2	15	-
=P3.S3.DR10	+LX1.LX2	M2	54	-
=P3.S3.DR2	+B1.F2.R1.CAB1	L1	20	-
=P3.S3.DR2	+B1.F2.R1.CAB1	L2	21	-
=P3.S3.DR2	+B1.H1.SM1	M1	19	-
=P3.S3.DR2	+B1.H1.SM1	M2	18	-
=P3.S3.DR3	+B1.F2.R1.CAB1	L1	24	-
=P3.S3.DR3	+B1.F2.R1.CAB1	L2	25	-
=P3.S3.DR3		M1	23	-
=P3.S3.DR3		M2	22	-

Record: 7 of 13

Aspect Type: CI_DIA
in Form: CI_DIA
Action: PrintDiagram
in Macro:

Figure 3-40. Using Multiple Execution for printing list of diagrams

The aspect type and form name is preset from Aspect Navigation dialog. The user has to select the action to be performed on the list of included aspects and press the **Execution** button. Now you can see, how all aspects are stepped through and the corresponding command/function is done.

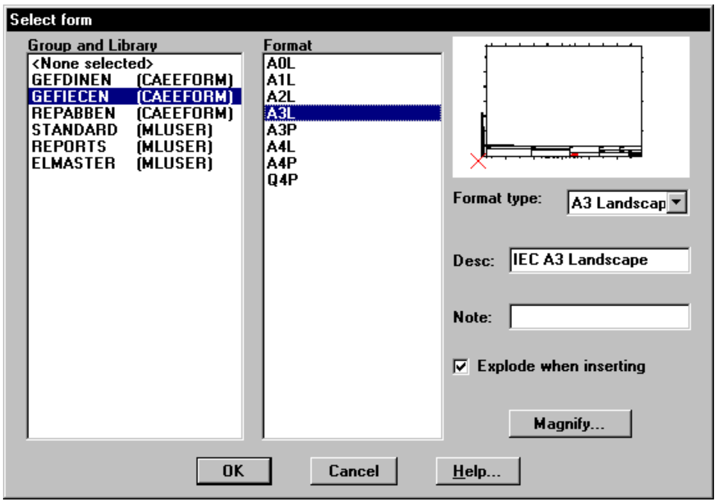
Note: The referenced form (dialog) must be opened (loaded) before execution!

3.6.5 Electrical Diagram Builder Drawing Operations

3.6.5.1 Inserting a Format

When a new diagram aspect is created and opened the first time via **Open | Diagram**, at first a format (frame incl. title block) must be inserted from the format library.

When opening the diagram from Structure Builder or EDIB Dialog, the **Select form** dialog is called automatically.



Format type: A3 Landscap

Desc: IEC A3 Landscape

Note:

☑ Explode when inserting

Figure 3-41. Selecting formats from format library

Note: a format can also be inserted or replaced manually. The corresponding commands can be chosen via screen menu items **Format | Insert** resp. **Format | Replace**.

3.6.5.2 Define a Common Designation for a Diagram

Each diagram sheet gets normally a set of designations, which is used as common for all symbols included in the diagram and is used to build the complete/absolute reference designations according rules described in designation standards (IEC 750, IEC 1082,..)

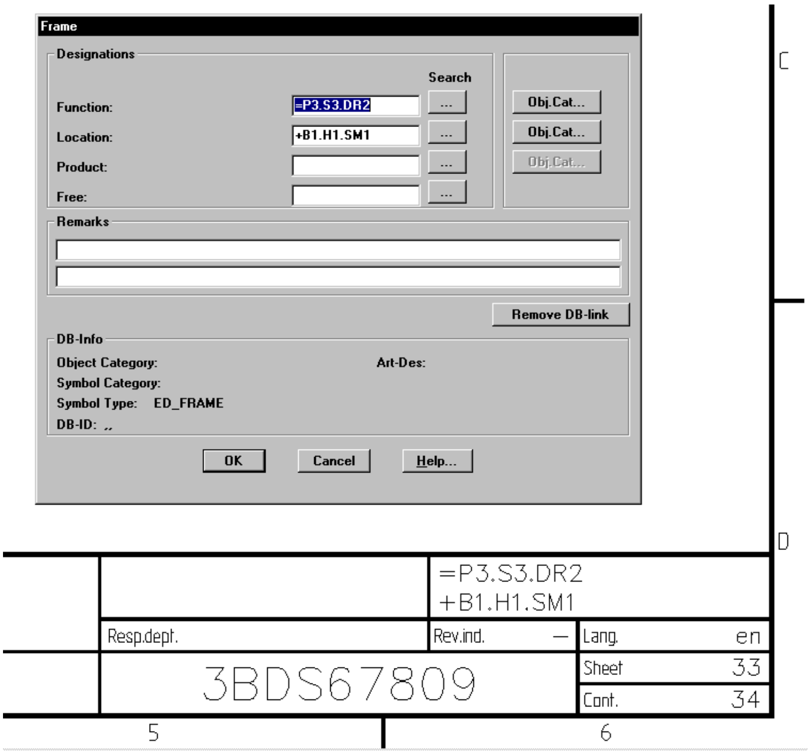
Those common designations are handled by a so called Common Item Designation block, which can be inserted manually via elMaster menu **Frames | Common Item Des.** and is placed typically within a reserved title block area.

Formats selected from **GEFIECEN** or **GEFDINEN** include this block already at its correct position.

For diagrams opened from Structure Builder or EDIB Dialog the common designations are set automatically if:

- the diagram is defined as aspect of an Advant Object within Structure Builder
- within the corresponding Advant Object exists one of the aspect types El. Structure, El. Device, El. Cable or El.Function

Otherwise the common item designations must be edited manually via elMaster menu **Frames | Common Item Des.** .



Function: =P3.S3.DR2

Location: +B1.H1.SM1

Symbol Type: ED_FRAME

DB-ID: ,,

Figure 3-42. Editing common item designation for sheet

3.6.5.3 Editing Circuit Diagrams

There are some base drawing functions which are mostly used and therefore described here in a workflow oriented way. For more details see elMaster Design User’s manual.

Draw multiple connecting lines

The multiple connecting line function can be used to draw several parallel connecting lines in one step. It can be drawn either thin lines for control circuits or thick lines (as in example) for main circuits.

.

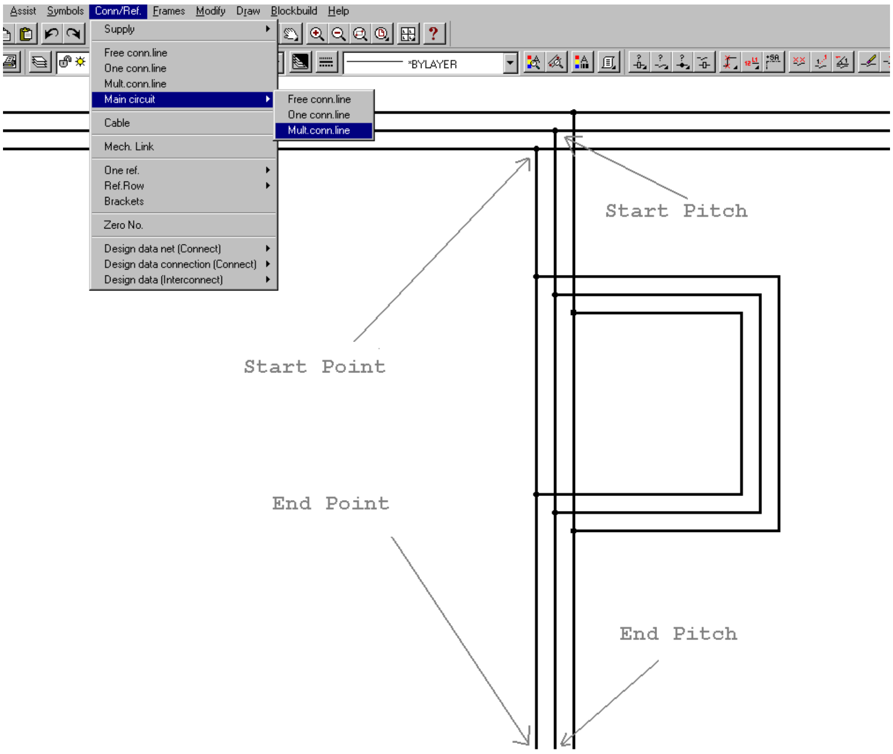
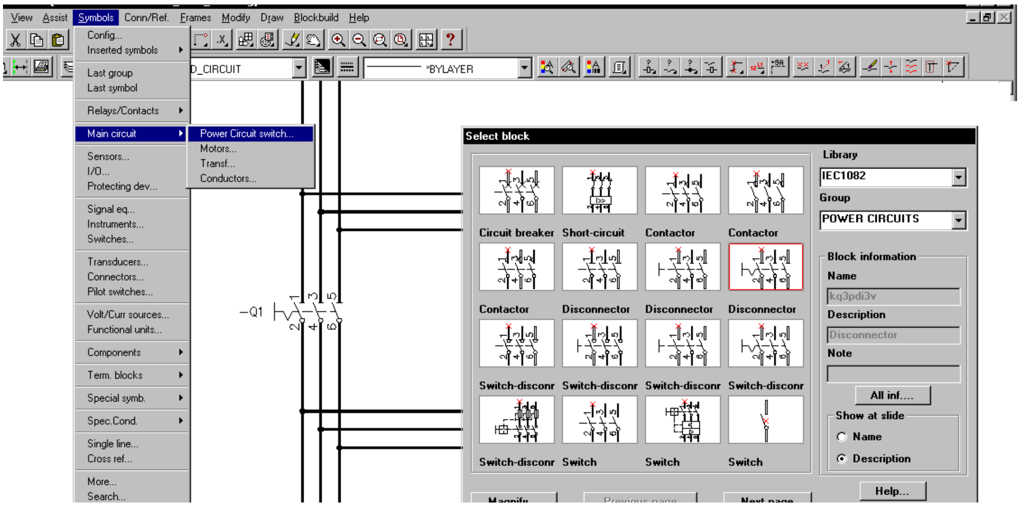


Figure 3-43. drawing multiple connecting lines

Place symbols

Symbols can be selected from icons reachable via Symbols menu item and placed within diagram. .



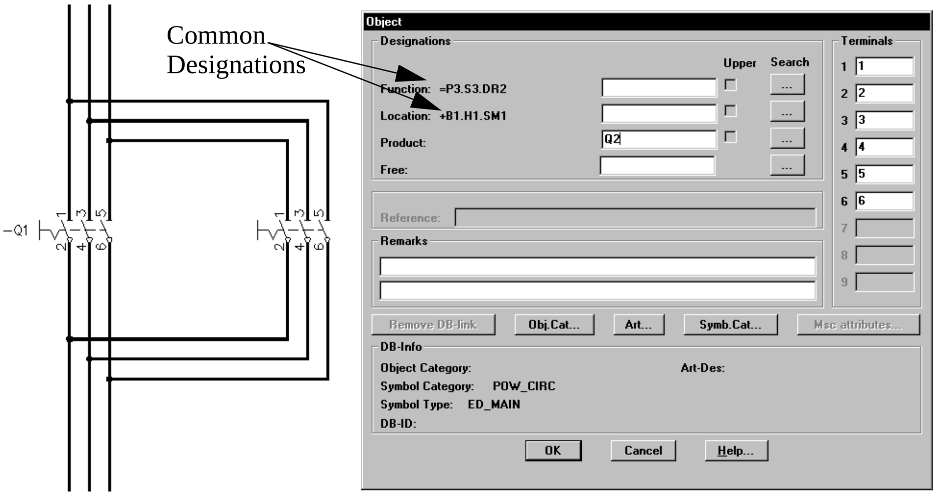
Library: IEC1082
Group: POWER CIRCUITS
Name: kq3pdi3v
Description: Disconnector
Note:

Figure 3-44. place symbol on connecting lines

If it are placed on connecting lines, the connecting lines automatically are broken up and connection points (terminals) of symbols are automatically connected to connecting lines

Edit Reference Designations, terminals and remarks

After insertion of symbols the **Object** dialog comes up (if enabled) and allows to edit reference designations, terminal designations, remark fields,....



Function: =P3.S3.DR2 ☐
Location: +B1.H1.SM1 ☐
Product: Q2 ☐
Free:

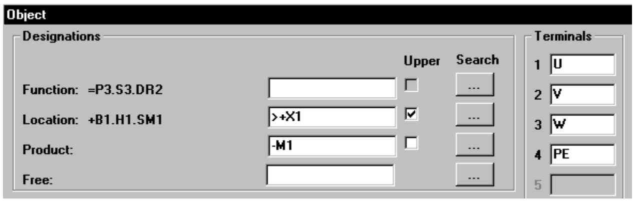
Terminals: 1 1, 2 2, 3 3, 4 4, 5 5, 6 6, 7, 8, 9

Object Category:
Art-Des:
Symbol Category: POW_CIRC
Symbol Type: ED_MAIN
DB-ID:

Figure 3-45. Editing reference designation at symbol

There should be given at least one identifying designation, which will be used to find (or create, if not exist) the correct object in the database. The other information can also be edited later or even updated later from database.

Warning: if there are given supplementary reference designations at the symbol, which are not identifying (for example supplementary location reference designation), those must be marked as “Upper” to avoid linking to wrong object in database.



Function: =P3.S3.DR2 ☐
Location: +B1.H1.SM1 >+X1 ☑
Product: -M1 ☐
Free:

Terminals: 1 U, 2 V, 3 W, 4 PE, 5

Figure 3-46. Marking supplementary designation as “Upper”

Defining signal references

It is not allowed to have open connecting lines. It must be terminated either by a connection point/terminal of a symbol or by a signal reference.

Signal references are used mainly to create automatically cross-references between connecting lines continued on other sheets. Additionally it give an identifying signal designation to an electrical net..

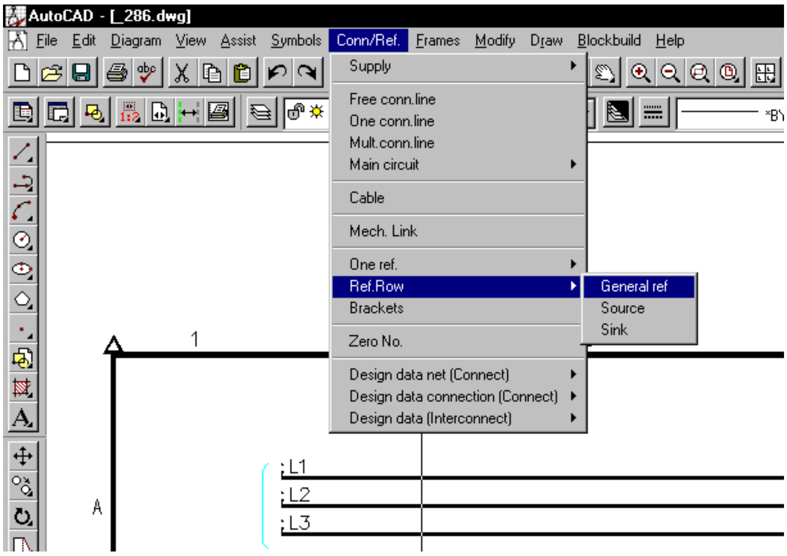


Figure 3-47. Insert signal reference row

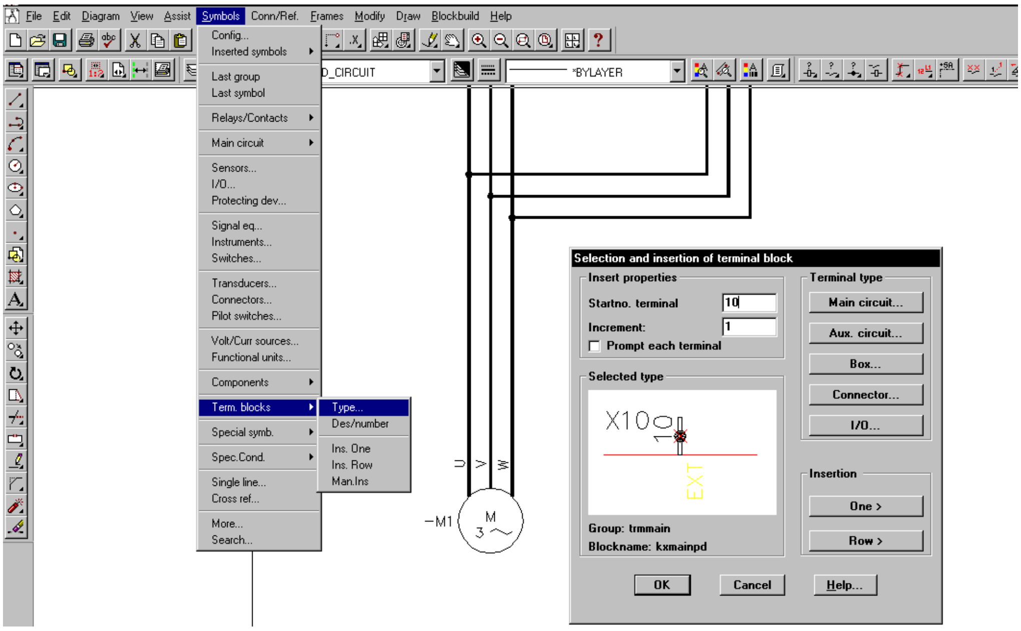
There can be selected different type of signal reference symbols, which influence the generation of signal cross-references:

- **General reference**: the cross-reference will be created between two consecutive symbols. The sorting order within one sheet is from left to right and from top to bottom, between sheets according sheet number.
- **Source**: a source reference symbol will get all references to existing sinks
- **Sink**: a sink reference symbol will always only reference back to its source

Note: referencing via Source/Sink symbols works only properly, if for a net identified by a signal designation exactly one source reference symbol exists!

Insert multiple terminals

For inserting multiple terminals in row, at first select the wanted terminal symbol type, enter the start terminal number and terminal number increment and press **Row** > button..



Startno. terminal: 10

Increment: 1

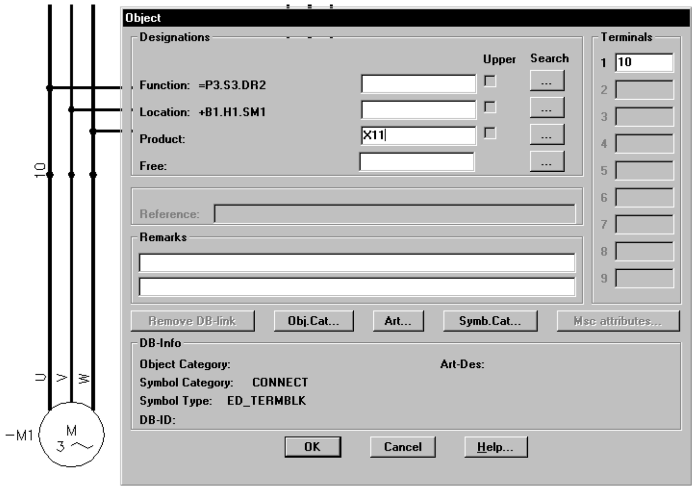
☐ Prompt each terminal

Group: trmmain

Blockname: kxmainpd

Figure 3-48. Insert row of terminals

Then elMaster Design prompts for insertion points, which can be given one after the other by clicking on the corresponding position on connecting lines. After the last insertion point press **<Return>** to get the Object dialog to enter the terminal bar designation..



Function: =P3.S3.DR2 ☐

Location: +B1.H1.SM1 ☐

Product: X11 ☐

Free:

Terminals: 1 10

Object Category:

Art-Des:

Symbol Category: CONNECT

Symbol Type: ED_TERMBLK

DB-ID:

Figure 3-49. Enter terminal designation

Then the terminals will be numbered consecutively and get the designation of the terminal bar it belong to.

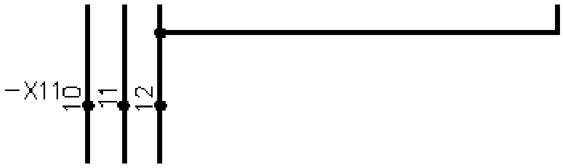


Figure 3-50. Numbering of terminals

Note: the terminal bar designation is shown only at the first inserted terminal symbol by using the **Row** function. Nevertheless all other terminals get the same terminal bar designation, but have the designation attributes moved to layer SOSED_CIRCUITOFF (which normally is switched off to hide the information). This must be considered, when renaming terminal bars.

3.6.5.4 Handling of Designations in Diagrams

The reference designations must be entered and are build according rules configured for a project. The default configuration is according IEC 750. Those rules and how it are used by the system is described in the following examples.
(for additional information and rules according IEC 1346 see elMaster design User's manual)

Concatenating reference designations

Reference designations are concatenated hierarchically with common designations and according the nesting of symbols within boundary frames.

- reference designations of same type are concatenated with highest priority
- product reference designations are build according the priority rule:
    1. with common product reference designation (if exists)
    2. with common function reference designation (if exists)
    3. with common location reference designation (if exists)
- signal designations are build according configured priority rule. It can be configured to use
    - function reference designation (default)
    - location reference designation

.

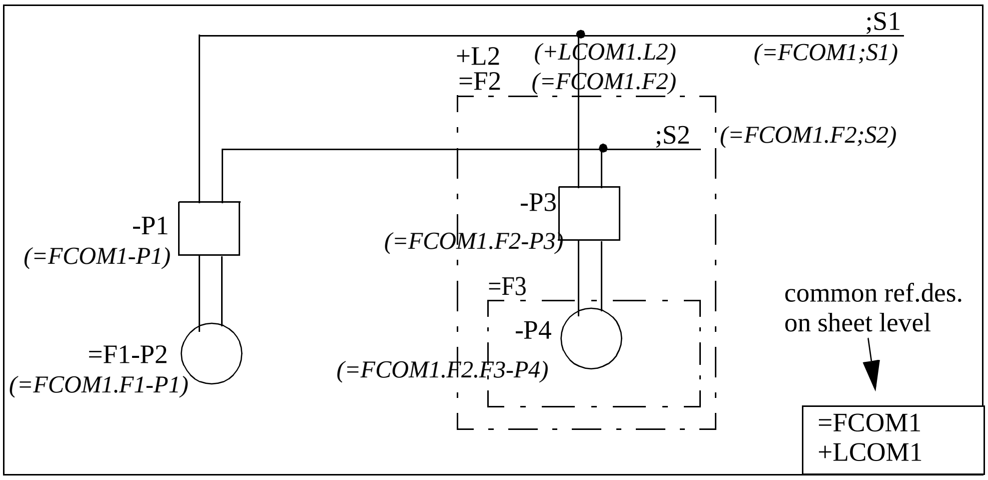


Figure 3-51. Example for a diagram incl. hierarchical reference designations

Defining exceptions from hierarchical concatenation

Sometimes it is needed to avoid the hierarchical concatenation with designation given on common (upper) level.

There exist two possibilities:

- use double-dotted boundary frame to exclude all designation
- use “>” to exclude specific designation

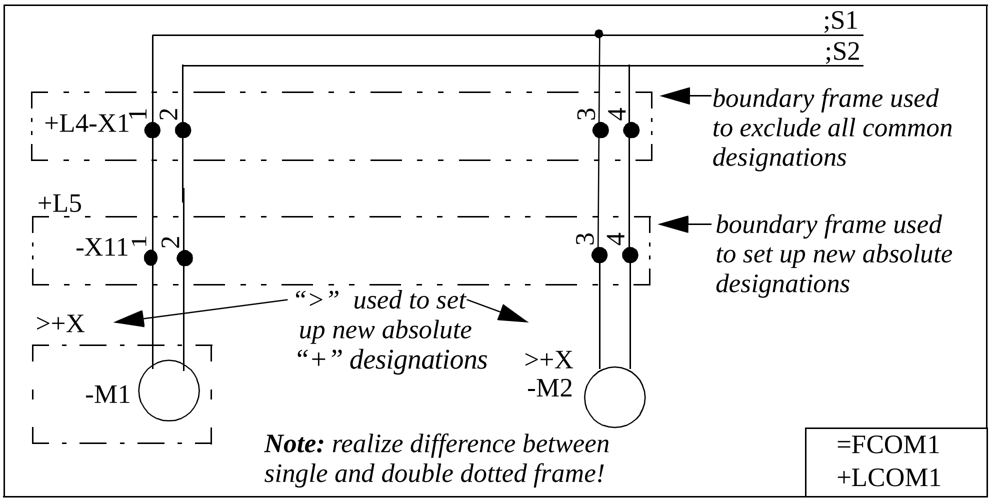


Figure 3-52. Example for a diagram incl. hierarchical reference designations

Use of upper/local designations

Within designation handling is distinguished between

- *Upper designations*
  An upper designation from a certain object point of view identifies the parent object in the corresponding structure
  Example: in figure below for item **-P2** are **=FCOM1.F1** and **+LCOM1.L3** used as upper designations
  It are typically defined as common designation on sheet level or via boundary frames. But is also possible to include it directly at symbol and turn it to "Upper"
- *Local Designation*
  those are individual for the symbol/object and are normally be used within identifying designation (designation, which identifies object unambiguously)
  Example: the product reference designation **-P2** is defined locally and concatenated with the common designation **=FCOM1.F1** as the identifying designation **=FCOM1.F1-P2**.

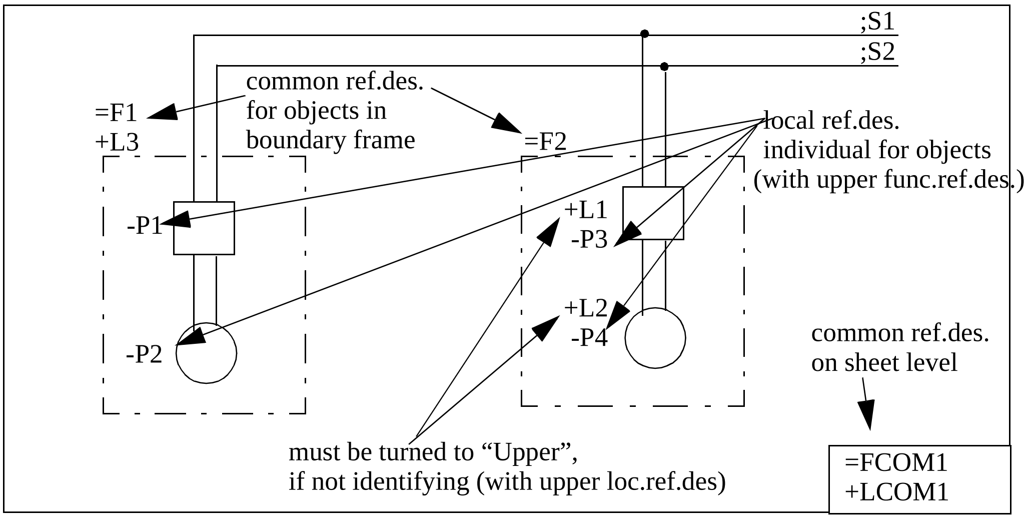


Figure 3-53. Example for a diagram incl. hierarchicl reference designations

3.6.5.5 Use of Cross-Reference Symbols

Cross-reference symbols in this context are used for detached representation of parts within circuit diagrams.

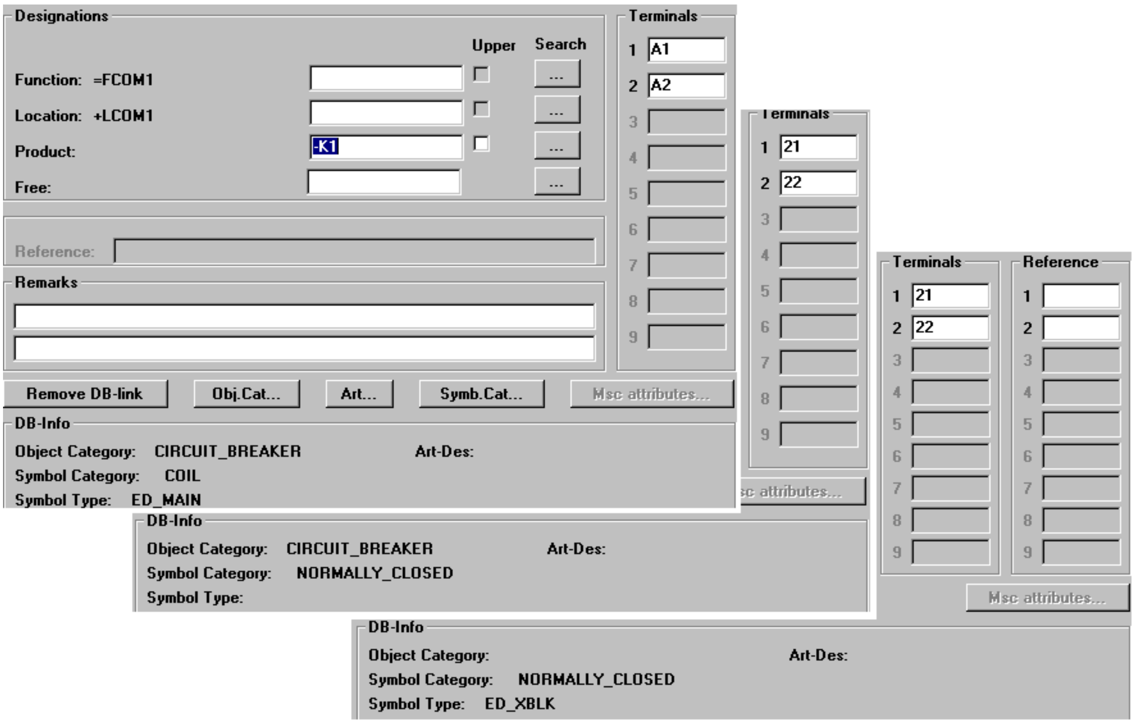
A typical example is a relay with its contacts, which can be spread over several diagrams.

The identification, which symbols belong to the same part, must be done via (at least) one identifying designation. In principle any of the available designations (=,+,-, free) can be used. But typically the product reference designation will be used for this purpose.

For cross-reference handling there are 3 type of symbols used

- one symbol of symbol type ED_MAIN. In following example this corresponds to the relay coil symbol
- one or several sub symbols (called also simply ***reference symbols*** in following description). Those normally have no symbol type set, but need to have one cross-reference attribute (CREF). In following example it correspond to the contact symbols spread over same or different diagram sheets

- one cross-reference symbol with symbol type ED_XBLK (called also ***referencing symbol***) connected to the main symbol. as counterpart for each used ***reference symbol***
  Connecting cross-reference symbols to the main symbol can be done via elMaster design menu item **Modify | Cross References| Connect symbols**
  Note: the symbol category of the reference and referencing symbol must be identical to create automatic cross-references. If terminal numbers are already given manually within cross-reference symbol, this is used as additional matching criteria.



Designations

Function: =FCOM1

Location: +LCOM1

Product: -K1

Free:

Reference:

Remarks

Terminals
1 A1
2 A2

DB-Info
Object Category: CIRCUIT_BREAKER
Symbol Category: COIL
Symbol Type: ED_MAIN
Art-Des:

Terminals
1 21
2 22

DB-Info
Object Category: CIRCUIT_BREAKER
Symbol Category: NORMALLY_CLOSED
Symbol Type:
Art-Des:

Terminals
1 21
2 22

Reference
1
2

DB-Info
Object Category:
Symbol Category: NORMALLY_CLOSED
Symbol Type: ED_XBLK
Art-Des:

Figure 3-54. Setting example for main, referenced and referencing symbols

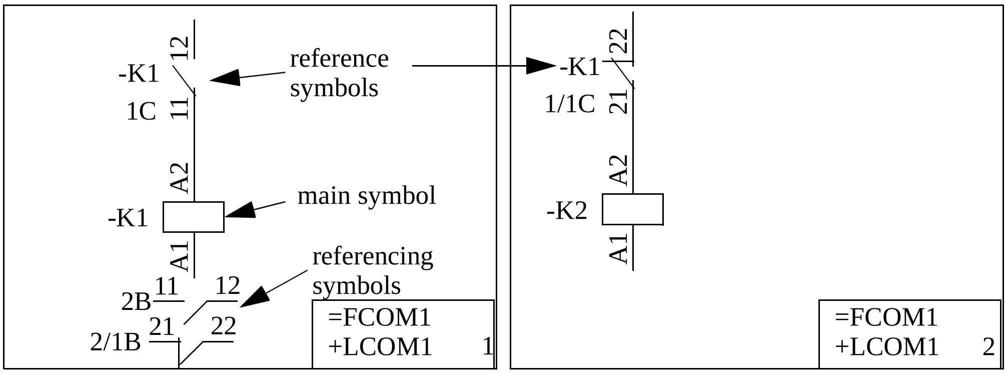


Figure 3-55. Example for cross referencing using detach representation of a relay

The functionality of cross reference handling can be configured within elMaster Project Administration via variables:

- ED_CREF_TREE: enabling different levels of cross-reference generation
- CREF_DEFAULT: for configuration of information/format within cross-reference

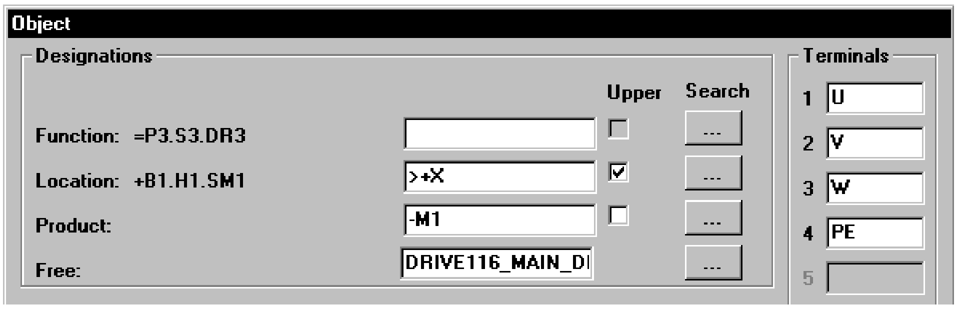
3.6.5.6 Automatic Linking of Symbols to existing Plant Objects

During saving a diagram to database the first time, the system tries to link symbols at first to already existing objects according designations given in diagram.

Only if now matching object is found in database, there will be created new objects.

The strategy to find matching objects is according following rules:

1. local reference designations are tested according configured sequence. The configuration can be done via variable `CODES_TEST_ORDER` (see elMaster project administrator User's manual). A value for example `CABD` means:
   - – test at first product reference designation (C)
   - – test as second function reference designation (A)
   - – test as third location reference designation (B)
   - – test as forth extra reference designation (D)
     (**Note**: actually not available within elMaster Design)
2. free designation is always tested as last one.



Object

Designations

Upper Search

Function: =P3.S3.DR3 ☐ ...

Location: +B1.H1.SM1 >+X ☑ ...

Product: -M1 ☐ ...

Free: DRIVE116_MAIN_DI ...

Terminals

1 U
2 V
3 W
4 PE
5

Figure 3-56. Editing designation at symbol

In the example above the product reference designation **=P3.S3.DR3-M1** will be tested at first, then the free designation to find a matching object. The location reference designation +X will not be tested, because it is turned to **Upper**

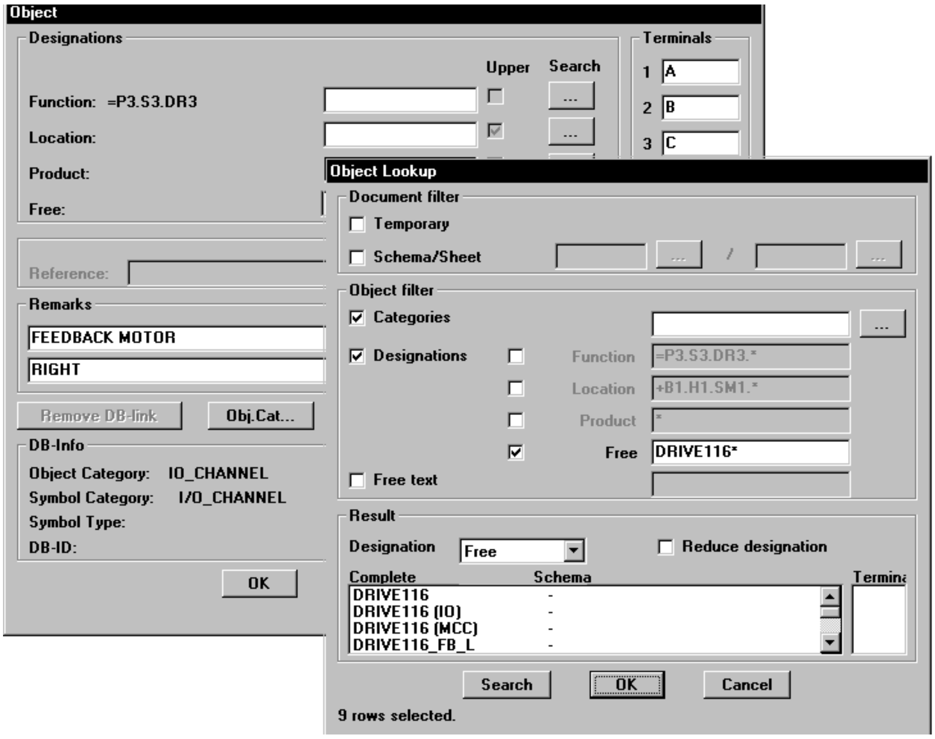
Important: it are tested always all designation till to the first hit to get the symbol-to-object link. If the link once is created, it remains independent from changing designations. Changing once created symbol-to-object links can only be done

- via manual linking of symbols to existing plant objects (see next section)
- via Remove DB-link in elMaster design
- by deleting the object in database

Hint: Sometimes it is required to update later supplementary designations from database. To avoid therefore to overwrite existing reference designations in database with wrong values from diagram, you can exclude them from save to database by entering just a “>” sign (not for Free designation)

3.6.5.7 Manual Linking of Symbols to existing Plant Objects

Symbols also can be linked manually to existing objects in the database by use of **Object Lookup** dialog, which can be called via **Search** button related to corresponding designation field in **Object** dialog.



Object

Designations

Function: =P3.S3.DR3

Location:

Product:

Free:

Terminals

1 A

2 B

3 C

Remarks

FEEDBACK MOTOR

RIGHT

DB-Info

Object Category: IO_CHANNEL

Symbol Category: I/O_CHANNEL

Symbol Type:

DB-ID:

Object Lookup

Document filter

☐ Temporary

☐ Schema/Sheet

Object filter

☑ Categories

☑ Designations

☐ Function =P3.S3.DR3.*

☐ Location +B1.H1.SM1.*

☐ Product *

☑ Free DRIVE116*

☐ Free text

Result

Designation: Free

☐ Reduce designation

Complete	Schema
DRIVE116	-
DRIVE116 (IO)	-
DRIVE116 (MCC)	-
DRIVE116_FB_L	-

9 rows selected.

Figure 3-57. Manual linking of symbols to objects in database

Warning: the designations are not automatically given back in correct format. The best way is to do an “Update from Database” after linking some symbols manually to database objects to get designations back in correct way.

3.6.5.8 Creating new Plant Objects from Diagrams

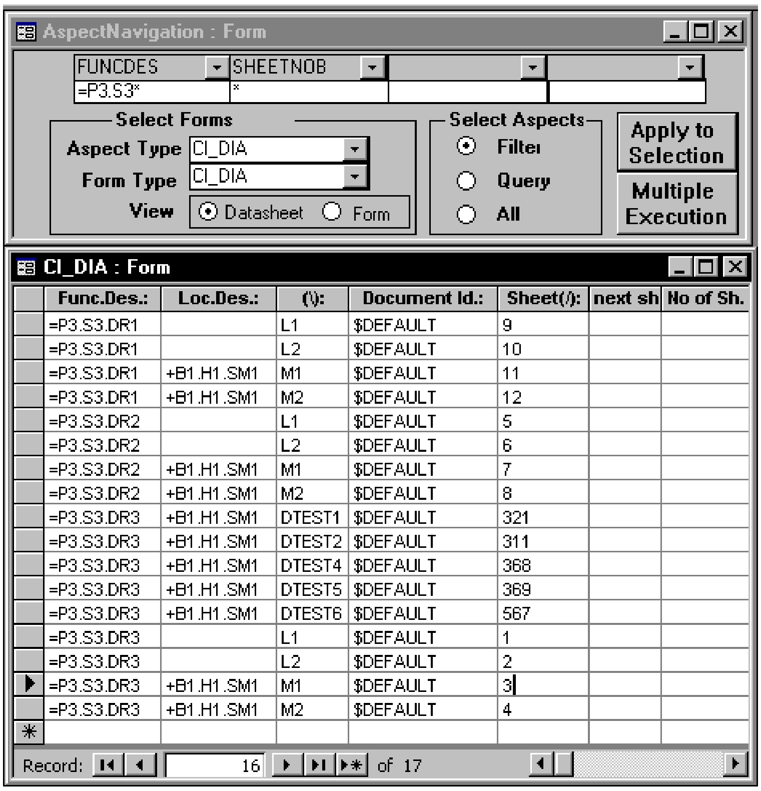
If during **Save to Database** no matching object according given designations is found, the object is created automatically in database

3.6.5.9 Creating Document/Sheet Numbers for Diagrams

Diagram sheets normally are organized into document packages according document number/id and sheet number.

You can assign a list of diagrams to a document package and number them in an efficient way within Electrical Diagram Builder dialog by doing following steps:

1. Filter and sort the list of diagrams by use of the **Aspect Navigation** dialog according the needs of a document package for diagrams.



FUNCDES	SHEETNOB		
=P3.S3*	*		

Aspect Type: CI_DIA
Form Type: CI_DIA
View: ● Datasheet ○ Form

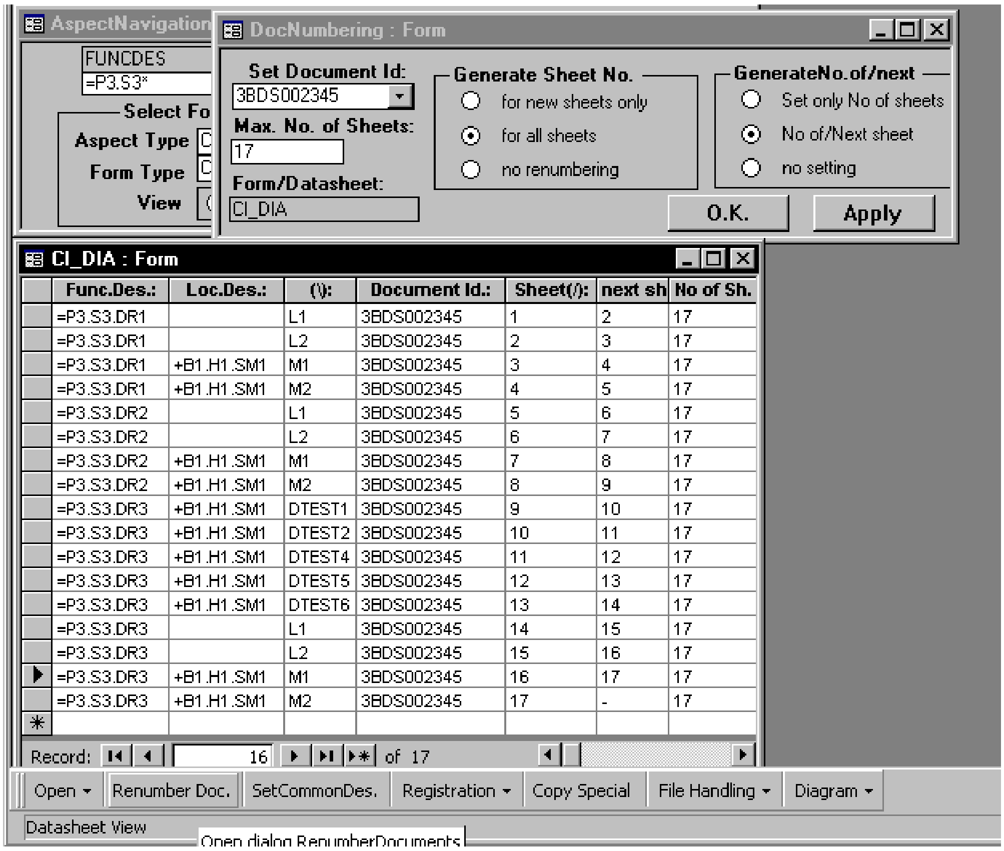
● Filter
○ Query
○ All

	Func.Des.:	Loc.Des.:	(\):	Document Id.:	Sheet(/):	next sh	No of Sh.
	=P3.S3.DR1		L1	$DEFAULT	9		
	=P3.S3.DR1		L2	$DEFAULT	10		
	=P3.S3.DR1	+B1.H1.SM1	M1	$DEFAULT	11		
	=P3.S3.DR1	+B1.H1.SM1	M2	$DEFAULT	12		
	=P3.S3.DR2		L1	$DEFAULT	5		
	=P3.S3.DR2		L2	$DEFAULT	6		
	=P3.S3.DR2	+B1.H1.SM1	M1	$DEFAULT	7		
	=P3.S3.DR2	+B1.H1.SM1	M2	$DEFAULT	8		
	=P3.S3.DR3	+B1.H1.SM1	DTEST1	$DEFAULT	321		
	=P3.S3.DR3	+B1.H1.SM1	DTEST2	$DEFAULT	311		
	=P3.S3.DR3	+B1.H1.SM1	DTEST4	$DEFAULT	368		
	=P3.S3.DR3	+B1.H1.SM1	DTEST5	$DEFAULT	369		
	=P3.S3.DR3	+B1.H1.SM1	DTEST6	$DEFAULT	567		
	=P3.S3.DR3		L1	$DEFAULT	1		
	=P3.S3.DR3		L2	$DEFAULT	2		
▶	=P3.S3.DR3	+B1.H1.SM1	M1	$DEFAULT	3		
	=P3.S3.DR3	+B1.H1.SM1	M2	$DEFAULT	4		
*							

Record: 16 of 17

Figure 3-58. Filtering/Sorting diagrams

2. Open **Document Numbering** dialog via **Renumber Doc.** toolbar item, enter required Document number/id and number of sheet, choose options for generating sheet number and setting next sheet/max no.of sheets and run numbering by pressing **O.K.** or **Apply** button.



Set Document Id: 3BDS002345

Max. No. of Sheets: 17

Form/Datasheet: CI_DIA

Generate Sheet No.
○ for new sheets only
● for all sheets
○ no renumbering

GenerateNo.of/next
○ Set only No of sheets
● No of/Next sheet
○ no setting

Func.Des.:	Loc.Des.:	(\):	Document Id.:	Sheet(/):	next sh	No of Sh.
=P3.S3.DR1		L1	3BDS002345	1	2	17
=P3.S3.DR1		L2	3BDS002345	2	3	17
=P3.S3.DR1	+B1.H1.SM1	M1	3BDS002345	3	4	17
=P3.S3.DR1	+B1.H1.SM1	M2	3BDS002345	4	5	17
=P3.S3.DR2		L1	3BDS002345	5	6	17
=P3.S3.DR2		L2	3BDS002345	6	7	17
=P3.S3.DR2	+B1.H1.SM1	M1	3BDS002345	7	8	17
=P3.S3.DR2	+B1.H1.SM1	M2	3BDS002345	8	9	17
=P3.S3.DR3	+B1.H1.SM1	DTEST1	3BDS002345	9	10	17
=P3.S3.DR3	+B1.H1.SM1	DTEST2	3BDS002345	10	11	17
=P3.S3.DR3	+B1.H1.SM1	DTEST4	3BDS002345	11	12	17
=P3.S3.DR3	+B1.H1.SM1	DTEST5	3BDS002345	12	13	17
=P3.S3.DR3	+B1.H1.SM1	DTEST6	3BDS002345	13	14	17
=P3.S3.DR3		L1	3BDS002345	14	15	17
=P3.S3.DR3		L2	3BDS002345	15	16	17
=P3.S3.DR3	+B1.H1.SM1	M1	3BDS002345	16	17	17
=P3.S3.DR3	+B1.H1.SM1	M2	3BDS002345	17	-	17

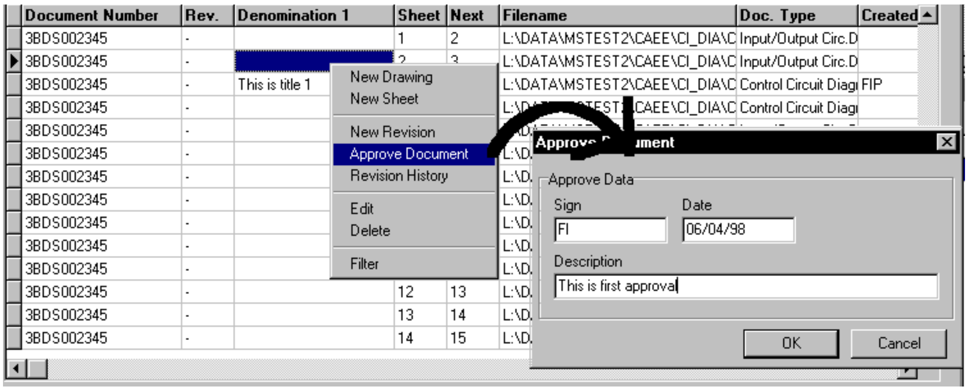
Record: 16 of 17

Figure 3-59. Number a list of selected diagrams

Then the document number, sheet, next sheet and number of sheets are set to given/calculated values.

3.6.5.10 Approve Diagrams, create new Revision

The approval of diagrams in database driven way is only possible via elMaster Project. Therefore use on corresponding diagram in **Drawing List** the **Approve Document** function from Right-Mouse-Button menu.



Document Number	Rev.	Denomination 1	Sheet	Next	Filename	Doc. Type	Created
3BDS002345	-		1	2	L:\DATA\MSTEST2\CAEE\CI_DIA\C	Input/Output Circ.D	
3BDS002345	-		2	3	L:\DATA\MSTEST2\CAEE\CI_DIA\C	Input/Output Circ.D	
3BDS002345	-	This is title 1			L:\DATA\MSTEST2\CAEE\CI_DIA\C	Control Circuit Diag	FIP
3BDS002345	-				L:\D	Control Circuit Diag	
3BDS002345	-						
3BDS002345	-				L:\D.		
3BDS002345	-				L:\D.		
3BDS002345	-				L:\D.		
3BDS002345	-				L:\D.		
3BDS002345	-				L:\D.		
3BDS002345	-				L:\D.		
3BDS002345	-		12	13	L:\D.		
3BDS002345	-		13	14	L:\D.		
3BDS002345	-		14	15	L:\D.		

Approve Data

Sign: FI

Date: 06/04/98

Description: This is first approval

Figure 3-60. Approval of diagrams

The same applies for creation of new revision. If you try to create a new revision for a not approved diagram, the system asks at first for approval.

3.6.5.11 Printing Diagrams

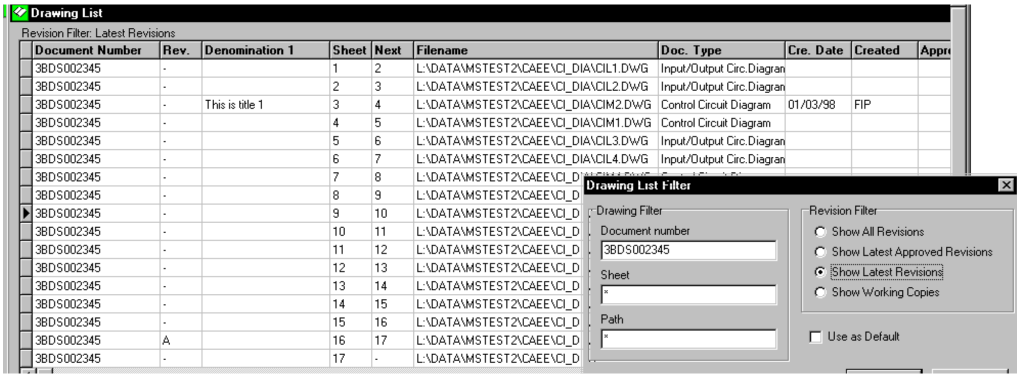
Printing of diagrams in principle can be done via Structure Builder, Electrical Builder Dialog or elMaster Project.

An efficient way in Electrical Builder Dialog is to run the **Print Diagram** function via **Multiple Execution** on a list of selected circuit diagrams.

But the restriction in Structure Builder and Electrical Builder Dialog is, that only the last version of a diagram can be printed (independent if approved or not).

So to print specific versions of diagrams (for example only last approved) for a diagram package can be done only within elMaster project. Therefore do following steps:

1. Filter out the diagrams of a certain package via **Drawing List Filter** dialog in elMaster Project



Revision Filter: Latest Revisions

Document Number	Rev.	Denomination 1	Sheet	Next	Filename	Doc. Type	Cre. Date	Created	Appr
3BDS002345	-		1	2	L:\DATA\MSTEST2\CAEE\CI_DIA\CIL1.DWG	Input/Output Circ.Diagran			
3BDS002345	-		2	3	L:\DATA\MSTEST2\CAEE\CI_DIA\CIL2.DWG	Input/Output Circ.Diagran			
3BDS002345	-	This is title 1	3	4	L:\DATA\MSTEST2\CAEE\CI_DIA\CIM2.DWG	Control Circuit Diagram	01/03/98	FIP	
3BDS002345	-		4	5	L:\DATA\MSTEST2\CAEE\CI_DIA\CIM1.DWG	Control Circuit Diagram			
3BDS002345	-		5	6	L:\DATA\MSTEST2\CAEE\CI_DIA\CIL3.DWG	Input/Output Circ.Diagran			
3BDS002345	-		6	7	L:\DATA\MSTEST2\CAEE\CI_DIA\CIL4.DWG	Input/Output Circ.Diagran			
3BDS002345	-		7	8	L:\DATA\MSTEST2\CAEE\CI_D				
3BDS002345	-		8	9	L:\DATA\MSTEST2\CAEE\CI_D				
3BDS002345	-		9	10	L:\DATA\MSTEST2\CAEE\CI_D				
3BDS002345	-		10	11	L:\DATA\MSTEST2\CAEE\CI_D				
3BDS002345	-		11	12	L:\DATA\MSTEST2\CAEE\CI_D				
3BDS002345	-		12	13	L:\DATA\MSTEST2\CAEE\CI_D				
3BDS002345	-		13	14	L:\DATA\MSTEST2\CAEE\CI_D				
3BDS002345	-		14	15	L:\DATA\MSTEST2\CAEE\CI_D				
3BDS002345	-		15	16	L:\DATA\MSTEST2\CAEE\CI_D				
3BDS002345	A		16	17	L:\DATA\MSTEST2\CAEE\CI_D				
3BDS002345	-		17	-	L:\DATA\MSTEST2\CAEE\CI_D				

Drawing Filter

Document number: 3BDS002345

Sheet: *

Path: *

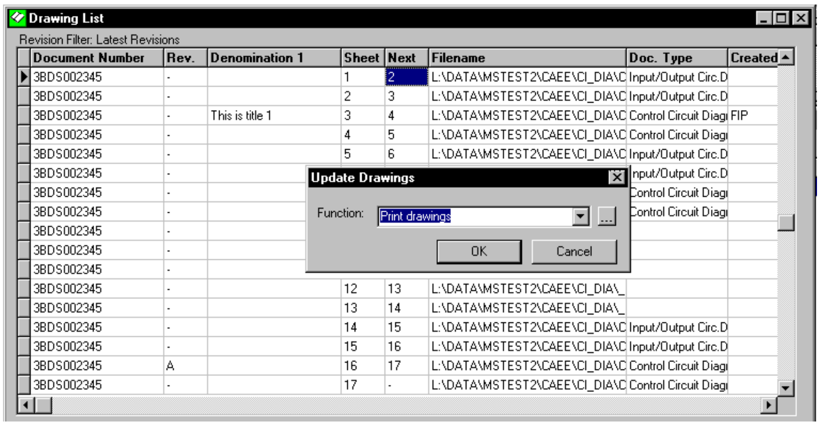
Revision Filter

○ Show All Revisions
○ Show Latest Approved Revisions
● Show Latest Revisions
○ Show Working Copies

☐ Use as Default

Figure 3-61. Filter for diagrams to be printed

2. Print the list of selected diagrams via **Print drawing** function selected within **Update Drawings** dialog.



Revision Filter: Latest Revisions

Document Number	Rev.	Denomination 1	Sheet	Next	Filename	Doc. Type	Created
3BDS002345	-		1	2	L:\DATA\MSTEST2\CAEE\CI_DIA\C	Input/Output Circ.D	
3BDS002345	-		2	3	L:\DATA\MSTEST2\CAEE\CI_DIA\C	Input/Output Circ.D	
3BDS002345	-	This is title 1	3	4	L:\DATA\MSTEST2\CAEE\CI_DIA\C	Control Circuit Diag	FIP
3BDS002345	-		4	5	L:\DATA\MSTEST2\CAEE\CI_DIA\C	Control Circuit Diag	
3BDS002345	-		5	6	L:\DATA\MSTEST2\CAEE\CI_DIA\C	Input/Output Circ.D	
3BDS002345	-					nput/Output Circ.D	
3BDS002345	-					ontrol Circuit Diag	
3BDS002345	-					ontrol Circuit Diag	
3BDS002345	-						
3BDS002345	-						
3BDS002345	-						
3BDS002345	-		12	13	L:\DATA\MSTEST2\CAEE\CI_DIA_		
3BDS002345	-		13	14	L:\DATA\MSTEST2\CAEE\CI_DIA_		
3BDS002345	-		14	15	L:\DATA\MSTEST2\CAEE\CI_DIA\C	Input/Output Circ.D	
3BDS002345	-		15	16	L:\DATA\MSTEST2\CAEE\CI_DIA\C	Input/Output Circ.D	
3BDS002345	A		16	17	L:\DATA\MSTEST2\CAEE\CI_DIA\C	Control Circuit Diag	
3BDS002345	-		17	-	L:\DATA\MSTEST2\CAEE\CI_DIA\C	Control Circuit Diag	

Function: Print drawings

Figure 3-62. Print a list of selected diagrams

Note: if the **OK** button is dimmed, select the **plot.lsp** file via browse button to run the function

3.7 Configuration/Application Building Menus

3.7.1 Structure Builder Integration Dialogs

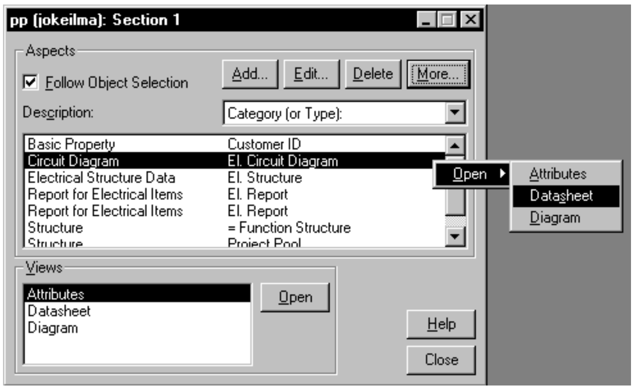
Performing commands **Open**, **Print** and **Synchronize** on the aspects:

- El. Circuit Diagram
- El. Structure
- El. Function
- El. Cable
- El. Report

from the Structure Builder invokes the Electrical Diagram Builder.

3.7.1.1 Open Command

The **Open** command starts the corresponding Electrical Diagram Builder dialog. Depending on the aspect type different views can be selected (see Figure 3-63)



pp (jokeilma): Section 1

☑ Follow Object Selection

Description: Category (or Type):

Basic Property	Customer ID
Circuit Diagram	El. Circuit Diagram
Electrical Structure Data	El. Structure
Report for Electrical Items	El. Report
Report for Electrical Items	El. Report
Structure	= Function Structure
Structure	Project Pool

Figure 3-63. Open Command

Open | Attributes

The **Open | Attributes** command starts the corresponding Electrical Diagram Builder dialog in the form view is available for the Electrical Diagram Builder aspects:

- El. Circuit Diagram
- El. Structure
- El. Device
- El. Function
- El. Cable
- El. Report

Open | Datasheet

The **Open | Datasheet** command starts the corresponding Electrical Diagram Builder Dialog in the datasheet view on a list of aspects of corresponding type belonging to same Advant Object. It is available for the Electrical Diagram Builder aspects:

- El. Circuit Diagram
- El. Report

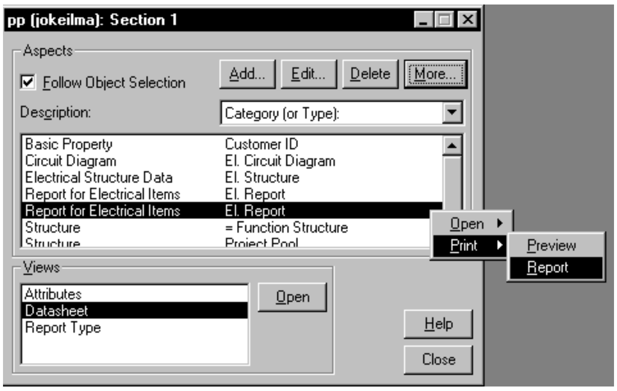
Open | Diagram

The **Open | Diagram** command starts *el*Master design and is available for the El. Circuit Diagram aspect.

Open | Report Type

The **Open | Report Type** command starts the Report Type Dialog in form view and is available for the El. Report aspect.

3.7.1.2 Print Command



pp (jokeilma): Section 1

☑ Follow Object Selection

Description: Category (or Type):

Basic Property	Customer ID
Circuit Diagram	El. Circuit Diagram
Electrical Structure Data	El. Structure
Report for Electrical Items	El. Report
Report for Electrical Items	El. Report
Structure	= Function Structure
Structure	Project Pool

Figure 3-64. Print Command

Print | Preview

The **Print | Preview** command performs a preview of the selected Report and is available for the El. Report aspect

Print | Report

The **Print | Report** command prints the selected Report and is available for the El. Report aspect

3.7.1.3 Synchronize Command

The synchronize command will transfer structures and designations defined by the Structure Builder into the Electrical Diagram Builder database. The synchronization is performed on user request (see Figure 3-65) and can be called from the following aspects:

- El. Structure
- El. Function (only for one object)
- El. Device (only for one object)
- El. Cable (only for one object)

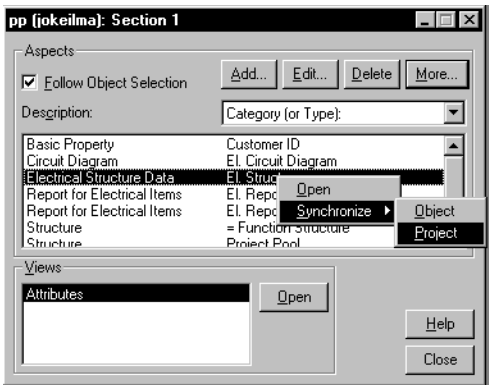


Figure 3-65. Synchronize Command

Synchronize | Object

The command **Synchronize | Object** synchronizes designations for all Electrical Diagram Builder aspects of the selected Object:

CAUTION

All parent objects in all object related structures must already be synchronized before you start this command! Synchronizing single objects is recommended only when adding objects to the lowest structure level.

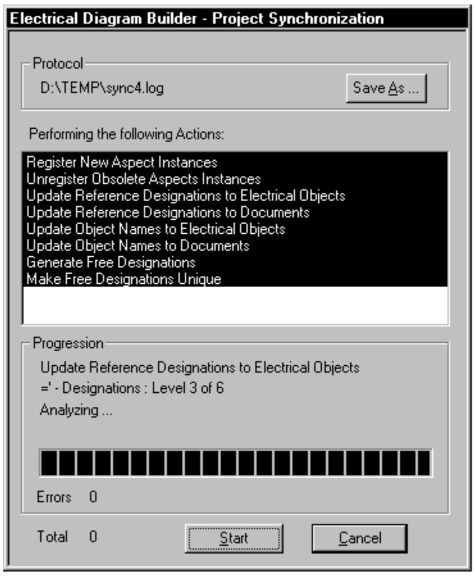
Synchronize | Project

The command **Synchronize Project** synchronizes the complete Electrical Diagram Builder database. Full synchronization can take some time depending on project size and should be done after major changes like:

- adding lots of Advant objects with electrical aspects
- re-arranging Advant object structures
- renaming reference designations

it is recommended that you should complete as much as possible prior to project synchronization, but it must be done, **before** you link diagrams to database.

Synchronization runs in different phases, which can be disabled to shorten **Project Synchronization** (see Figure 3-66). The synchronization of reference designations is performed in the sequence =, +, -, #.



D:\TEMP\sync4.log

Performing the following Actions:

Register New Aspect Instances
Unregister Obsolete Aspects Instances
Update Reference Designations to Electrical Objects
Update Reference Designations to Documents
Update Object Names to Electrical Objects
Update Object Names to Documents
Generate Free Designations
Make Free Designations Unique

Update Reference Designations to Electrical Objects
=' - Designations : Level 3 of 6
Analyzing ...

Errors 0

Total 0

Figure 3-66. Project Synchronization Dialog

Register New Aspect Instances

Register new electrical aspects within Structure Builder which have been created via Electrical Diagram Builder dialogs

Unregister Obsolete Aspect Instances

Remove electrical aspects within Structure Builder which have been deleted or un-registered via Electrical Diagram Builder dialogs.

Update Reference Designations to Electrical Objects

Update reference designations from Structure Builder to the electrical objects in the Electrical Diagram Builder database, i.e. the reference designations of all Advant object having an electrical aspect of type El. Structure, El. Device, El. Function and El.Cable will be updated.

Update Reference Designations to Documents

Update reference designations from Structure Builder to the documents in the Electrical Diagram Builder database, i.e. the reference designations of all Advant object having an electrical aspect of type El. Circuit Diagram and El. Report will be updated.

Update Object Names to Electrical Objects

Update object names (Basic Properties aspects) from Structure Builder to the electrical objects in the Electrical Diagram Builder database.

Update Object Names to Documents

Update object names (Basic Properties aspects) from Structure Builder to the documents in the Electrical Diagram Builder database.

Generate Free Designations

Generate the identifying designations according to the specified designation rules

Make Free Designations Unique

If the identifying designations according to the specified designation rule are not unique they will be modified to a unique value by adding the character '$' and a running number.

3.7.2 Electrical Diagram Builder Dialogs

3.7.2.1 Electrical Diagram Builder Menu

The menu of the Electrical Diagram Builder is identical to the Microsoft Access standard menu (see Figure 3-67). The menu functions are described in your Microsoft Access User's Manual.

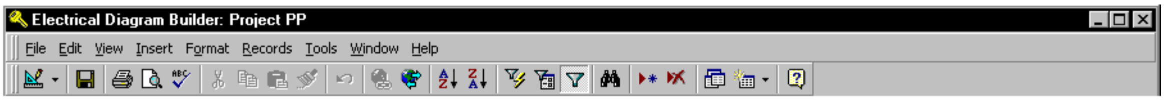
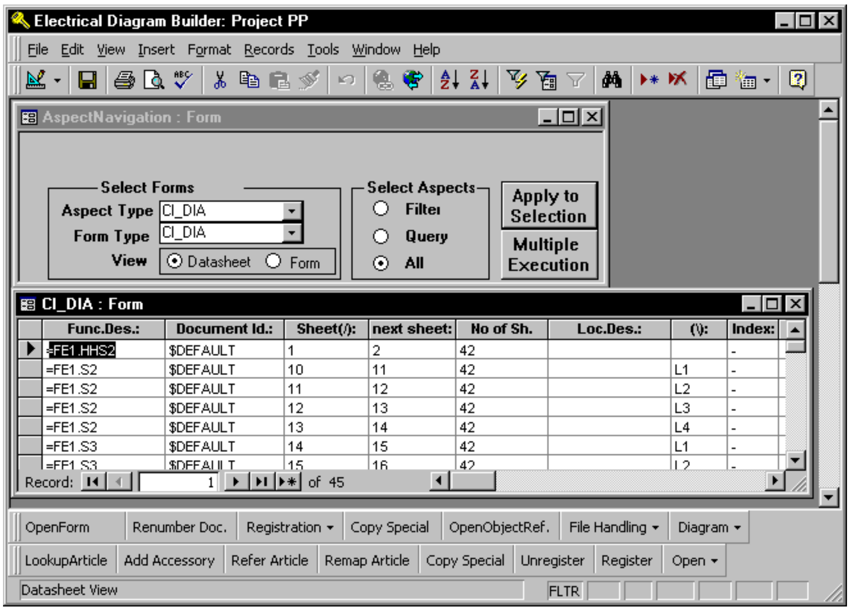


Figure 3-67. Electrical Diagram Builder Menu

3.7.2.2 Electrical Diagram Builder Toolbars

Besides the Microsoft Access toolbars Electrical Diagram Builder provides additional toolbars. The toolbars are related to the electrical aspects and allow specific commands. The toolbars are automatically displayed when the corresponding dialog is selected. As the functions provided by the toolbars are related to the currently selected aspect type they are described together with the other dialog functions. Toolbars can be placed individually, but it is recommended to anchor them always on the bottom of the Electrical Diagram Builder window as shown in Figure 3-68.

The individual functions provided by the toolbars are described together with each Electrical Diagram Builder dialog.



Aspect Type: CI_DIA
Form Type: CI_DIA
View: ● Datasheet ○ Form

Func.Des.:	Document Id.:	Sheet(/):	next sheet:	No of Sh.	Loc.Des.:	(\):	Index:
=FE1.HHS2	$DEFAULT	1	2	42			-
=FE1.S2	$DEFAULT	10	11	42		L1	-
=FE1.S2	$DEFAULT	11	12	42		L2	-
=FE1.S2	$DEFAULT	12	13	42		L3	-
=FE1.S2	$DEFAULT	13	14	42		L4	-
=FE1.S3	$DEFAULT	14	15	42		L1	-
=FE1.S3	$DEFAULT	15	16	42		L2	-

Record: 1 of 45

Datasheet View

Figure 3-68. Electrical Diagram Builder Toolbars

3.7.2.3 Copy Special Toolbar

The Copy Special toolbar is the only toolbar which is not directly related to a certain aspect type. The toolbar can be called from several other toolbars. It allows to copy a list of selected aspects to a list of selected Advant Objects

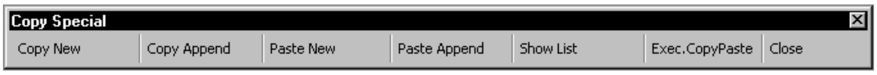


Figure 3-69. Copy Special Toolbar

The selection of aspects is done via the record selectors in form/datasheet view.

Toolbar Commands

Copy New
Click **Copy New** to clear the internal copy buffer and add the list of selected aspects to the copy buffer

Copy Append
Click **Copy Append** to add the list of selected aspects to the copy buffer

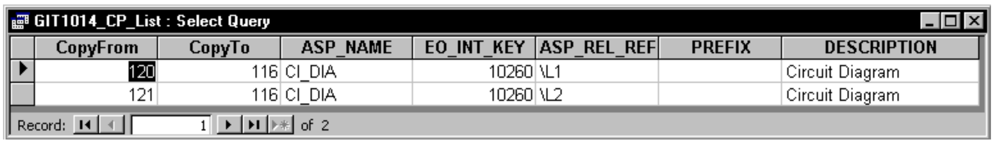
Paste New
Click **Paste New** to clear the internal paste buffer and add the list of selected aspects

NOTE

The paste buffer includes the Advant Object representatives

Paste Append
Click **Paste Append** to add the list of selected aspects to the paste buffer

Show List
Click **Show List** to display a preview of the copies, which will be executed



CopyFrom	CopyTo	ASP_NAME	EO_INT_KEY	ASP_REL_REF	PREFIX	DESCRIPTION
120	116	CI_DIA	10260	\L1		Circuit Diagram
121	116	CI_DIA	10260	\L2		Circuit Diagram

Figure 3-70. Copy / Paste List

Exec. Copy/Paste
Click **Exec. Copy/Paste** to executes the predefined copies in the copy/paste buffer

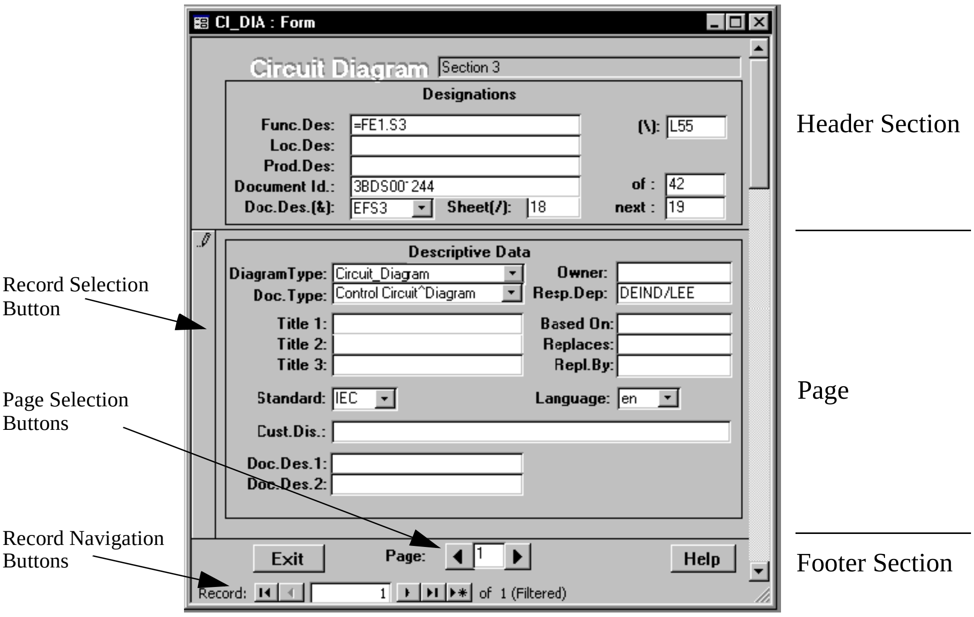
Close
Click **Close** to exit the toolbar

CAUTION

Always use the **Close** button to leave the Copy Special function because only the **Close** button completely resets the toolbar

3.7.2.4 Common Functions in Electrical Diagram Builder Dialogs

Some functions are common to all Electrical Diagram Builder dialogs (see Figure 3-71 and Figure 3-72):



Section 3

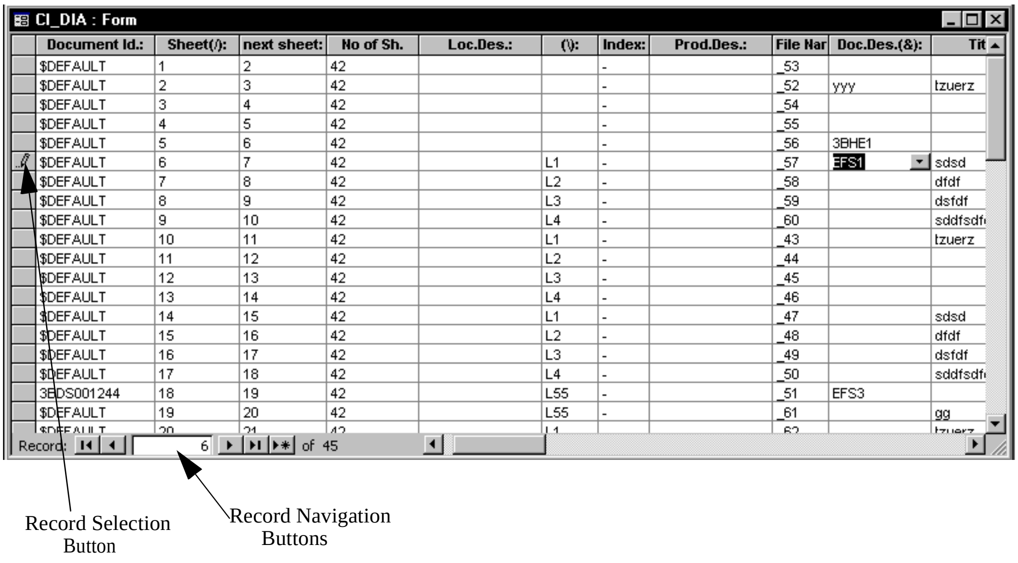
Func.Des:	=FE1.S3	(\):	L55
Loc.Des:			
Prod.Des:			
Document Id.:	3BDS00`244	of :	42
Doc.Des.(&):	EFS3	next :	19
Sheet(/):	18		

DiagramType:	Circuit_Diagram	Owner:	
Doc.Type:	Control Circuit^Diagram	Resp.Dep:	DEIND/LEE
Title 1:		Based On:	
Title 2:		Replaces:	
Title 3:		Repl.By:	
Standard:	IEC	Language:	en
Cust.Dis.:			
Doc.Des.1:			
Doc.Des.2:			

Page: 1

Record: 1 of 1 (Filtered)

Figure 3-71. Common Electrical Diagram Builder Dialog Functions - Form View



Document Id.:	Sheet(/):	next sheet:	No of Sh.	Loc.Des.:	(\):	Index:	Prod.Des.:	File Nar	Doc.Des.(&):	Tit
$DEFAULT	1	2	42			-		_53		
$DEFAULT	2	3	42			-		_52	yyy	tzuerz
$DEFAULT	3	4	42			-		_54		
$DEFAULT	4	5	42			-		_55		
$DEFAULT	5	6	42			-		_56	3BHE1	
$DEFAULT	6	7	42		L1	-		_57	EFS1	sdsd
$DEFAULT	7	8	42		L2	-		_58		dfdf
$DEFAULT	8	9	42		L3	-		_59		dsfdf
$DEFAULT	9	10	42		L4	-		_60		sddfsdf
$DEFAULT	10	11	42		L1	-		_43		tzuerz
$DEFAULT	11	12	42		L2	-		_44		
$DEFAULT	12	13	42		L3	-		_45		
$DEFAULT	13	14	42		L4	-		_46		
$DEFAULT	14	15	42		L1	-		_47		sdsd
$DEFAULT	15	16	42		L2	-		_48		dfdf
$DEFAULT	16	17	42		L3	-		_49		dsfdf
$DEFAULT	17	18	42		L4	-		_50		sddfsdf
3BDS001244	18	19	42		L55	-		_51	EFS3	
$DEFAULT	19	20	42		L55	-		_61		gg
$DEFAULT	20	21	42		L1			_62		tzuerz

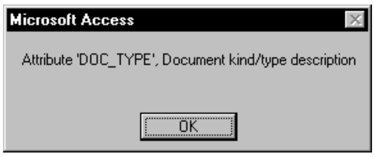
Record: 6 of 45

Figure 3-72. Common Electrical Diagram Builder Dialog Functions - Datasheet View

Dialog Controls

Exit
Click **Exit** to closes the corresponding dialog

Help
Click Help to display a window with the internal name and a description text of the selected attribute. This function is helpful when defining own filters, queries or reports.



Attribute 'DOC_TYPE', Document kind/type description

Figure 3-73. Help Button

Page Selection Buttons
Use the Page Selection Buttons to switch to the next or previous page. The page number can be edited manually.

Record Selection Button
Click the **Record Selection Button** to save the modifications you have made to the data in the dialog to the database

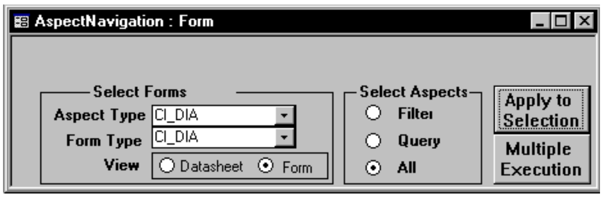
Record Navigation Buttons
Use the **Record Navigation Buttons** to navigate between the electrical aspects in the database. for more details see the Microsoft Access User's Manual.

NOTE

> Not all available attributes are initially displayed in the datasheet. The attributes to be displayed in a datasheet can be selected using the standard Microsoft Access menu commands to hide, unhide and freeze columns from the Format menu.

3.7.2.5 Aspect Navigation Dialog

The Aspect Navigation dialog allows to select electrical aspects and open dialogs on aspects directly within Electrical Diagram Builder (see Figure 3-74).



Aspect Type: CI_DIA
Form Type: CI_DIA
View: ○ Datasheet ● Form
○ Filter
○ Query
● All

Figure 3-74. Aspect Navigation Dialog

Dialog Controls

Aspect Type
defines the aspect type, for which a dialog shall be opened. The aspect type can be selected from the list of values. It is possible to type in also names of other existing Microsoft Access tables or queries.

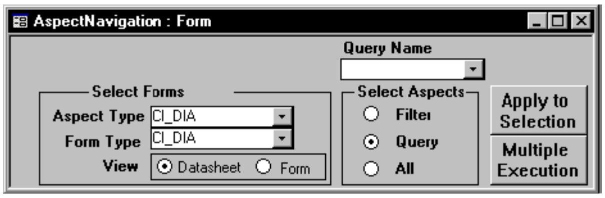
Form Type
defines the name of the form to be opened on the aspect type. Form type is automatically set to the default form name, if an aspect type is selected. It is possible to type in also names of other existing Microsoft Access forms, e.g. user defined forms.

View
defines, if the dialog shall be opened either in **Form** view or in **Datasheet** view

Select Aspects
defines the selection criteria for aspects

All
Click **All** to display all available aspects in the dialog

Query
Click **Query** to display aspects according to the filter criteria specified in a user defined query. The available queries can be selected from the appearing **Query Name** control



Aspect Type: CI_DIA
Form Type: CI_DIA
View: ● Datasheet ○ Form
Select Aspects: ○ Filter ● Query ○ All

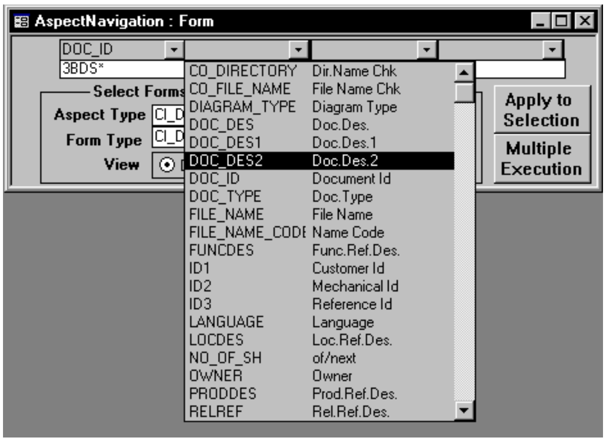
Figure 3-75. Aspect Navigation - Select Aspects - Query

NOTE

Refer to Microsoft Access Help “Creating Filters” for a description on how to define own queries

Filter
Click **Filter** to specify the filter criteria for the aspect attributes to be selected. Define the

attributes and filter criteria in the appearing filter controls (see Figure 3-76). Attribute names can be typed in or selected from a list of values.



DOC_ID
3BDS*

CO_DIRECTORY	Dir.Name Chk
CO_FILE_NAME	File Name Chk
DIAGRAM_TYPE	Diagram Type
DOC_DES	Doc.Des.
DOC_DES1	Doc.Des.1
DOC_DES2	Doc.Des.2
DOC_ID	Document Id
DOC_TYPE	Doc.Type
FILE_NAME	File Name
FILE_NAME_CODE	Name Code
FUNCDES	Func.Ref.Des.
ID1	Customer Id
ID2	Mechanical Id
ID3	Reference Id
LANGUAGE	Language
LOCDES	Loc.Ref.Des.
NO_OF_SH	of/next
OWNER	Owner
PRODDES	Prod.Ref.Des.
RELREF	Rel.Ref.Des.

Figure 3-76. Aspect Navigation - Select Aspects - Filter

The following conventions are used when defining the filter criteria:

- * or % is used as wildcard for zero or more characters
- ? or _ is used as wildcard for exactly one character
- an empty field as filter value attribute is used for a NULL value or zero string. So you can filter also for aspects, which have no value defined for a certain attribute.
- the selected aspects are sorted according the sequence, in which the filter attributes are given

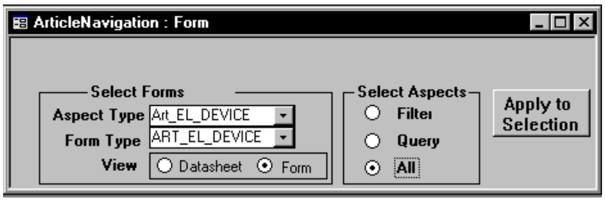
Apply to Selection
Click **Apply to Selection** to opens the selected dialog and displays the aspects according to the specified selection criteria.

Multiple Execution
Click **Multiple Execution** to open the dialog to perform the execution of commands/functions on a list of selected aspects. See Section 3.7.2.7, Multiple Execution Dialog.

3.7.2.6 Article Navigation Dialog

The Article Navigation dialog allows the selection of articles (i.e. electrical cable and electrical device articles) from the article library and to open dialogs to display the article data within Electrical Diagram Builder.

Although articles are not available as aspects within Structure Builder, they are handled like aspects within Electrical Diagram Builder.



ArticleNavigation : Form

Select Forms

Aspect Type: Art_EL_DEVICE

Form Type: ART_EL_DEVICE

View: ○ Datasheet ● Form

Select Aspects

○ Filter

○ Query

● All

Figure 3-77. Article Navigation Dialog

Dialog Controls

Aspect Type
defines the aspect type, for which a dialog shall be opened. The type can be selected from the list of values.

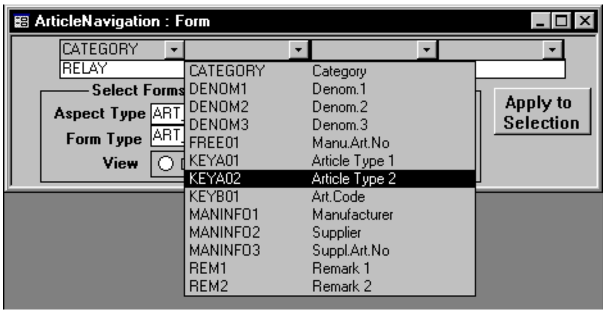
Form Type
defines the name of the form to be opened on the aspect type. Form type is automatically set to the default form name, if an aspect type is selected.

View
defines, if the dialog shall be opened either in **Form** view or in **Datasheet** view

Select Aspects
defines the selection criteria for aspects

> **All**
> Click **All** to display all available aspects in the dialog
>
> **Query**
> Click **Query** to display aspects according to the filter criteria specified in a user defined query. The available queries can be selected from the appearing **Query Name** control
>
> **Filter**
> Click **Filter** to specify the filter criteria for the aspect attributes to be selected. Define the

attributes and filter criteria in the appearing filter controls (see Figure 3-78). Attribute names can be typed in or selected from a list of values.



CATEGORY
RELAY
Aspect Type: ART_
Form Type: ART_

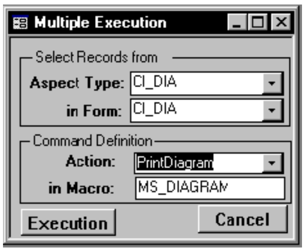
CATEGORY	Category
DENOM1	Denom.1
DENOM2	Denom.2
DENOM3	Denom.3
FREE01	Manu.Art.No
KEYA01	Article Type 1
KEYA02	Article Type 2
KEYB01	Art.Code
MANINFO1	Manufacturer
MANINFO2	Supplier
MANINFO3	Suppl.Art.No
REM1	Remark 1
REM2	Remark 2

Figure 3-78. Article Navigation - Select Aspects - Filter

Apply to Selection
Click **Apply to Selection** to opens the selected dialog and displays the aspects according to the specified selection criteria.

3.7.2.7 Multiple Execution Dialog

The **Multiple Execution** dialog can be used to perform any command defined for aspects on a list of selected aspects. The list of selected aspects is defined by those aspects listed in an opened/active dialog. Use the filter/query mechanisms of the **Aspect Navigation** dialog to select the aspects for which what you want to call **Multiple Execution** dialog.



Aspect Type: CI_DIA
in Form: CI_DIA
Action: PrintDiagram
in Macro: MS_DIAGRAM

Figure 3-79. Multiple Execution Dialog

Dialog Controls

Aspect Type
specifies the aspect type. Available aspect types can be selected from a list of values.

in Form
specifies the name of the form/datasheet from where the list of aspects is selected. Available forms can be selected from a list of values.

Action
specifies the command/action to be executed. Available commands can be selected from a list of values.

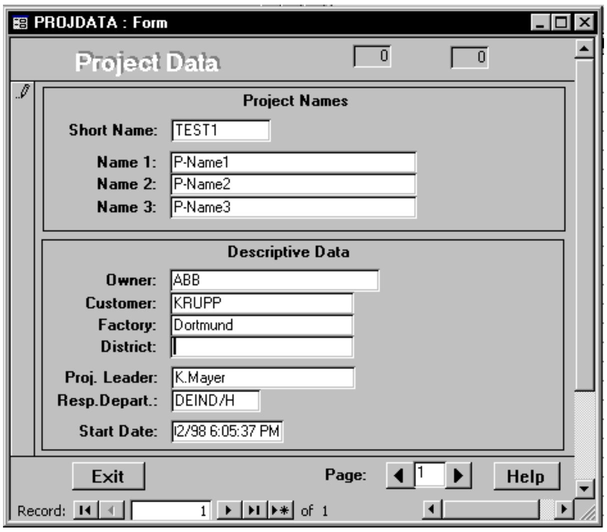
in Macro
specifies the name of the Microsoft Access macro from where to select the available commands (actions). The value is automatically set to correct value according to the selected aspect type when selecting the action

Execution
Click **Execution** to run the selected command on the selected list of aspects.

Cancel
Click **Cancel** to stop the execution of the command

3.7.2.8 Project Data Dialog

With the Project Data Dialog you can edit project specific information, i.e project names and descriptive data which is feed to the title block of reports.



Project Names

Short Name: TEST1

Name 1: P-Name1
Name 2: P-Name2
Name 3: P-Name3

Descriptive Data

Owner: ABB
Customer: KRUPP
Factory: Dortmund
District:

Proj. Leader: K.Mayer
Resp.Depart.: DEIND/H

Start Date: l2/98 6:05:37 PM

Page: 1

Record: 1 of 1

Figure 3-80. Project Data Dialog

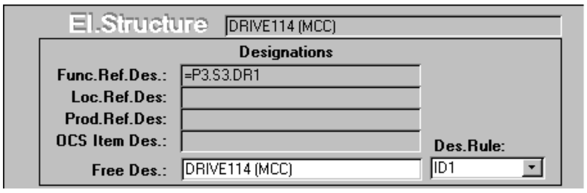
NOTE

Those project data are only used within Electrical Diagram Builder reports. Project data used within diagrams or elMaster reports must be defined within elMaster Project on project object.

3.7.2.9 Electrical Structure Dialog

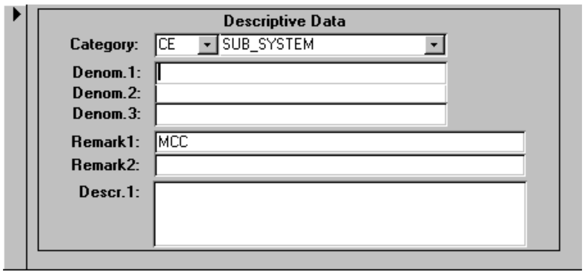
The Electrical Structure aspect (internal name **EL_STRUC**) is used to identify electrical plant objects representing a structure level in the structures relevant for building reference designations. The dialog on Electrical Structure aspects can be used in form or datasheet view. The form consists of a header section, two pages and a footer section

Header Section



El.Structure: DRIVE114 (MCC)
Func.Ref.Des.: =P3.S3.DR1
Free Des.: DRIVE114 (MCC)
Des.Rule: ID1

Page 1



Category: CE SUB_SYSTEM
Remark1: MCC

Page 2

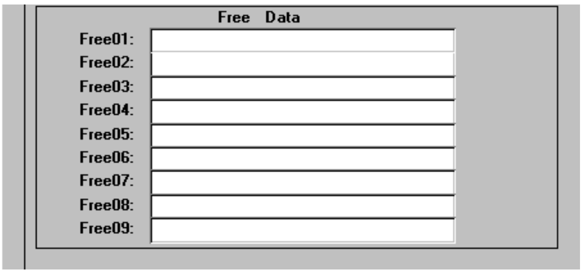


Figure 3-81. Electrical Structure Dialog - Form View

Dialog Controls for Designations (Header Section)

Func.Ref.Des
Function reference designation (=) of the Advant object. The attribute can not be modified, because it is automatically set.

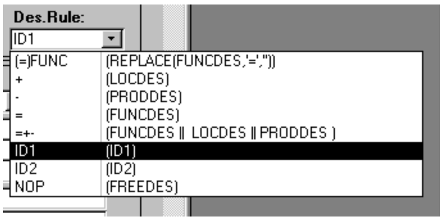
Loc.Ref.Des
Mounting location reference designation (+) of the Advant object. The attribute can not be modified, because it is automatically set.

Prod.Ref.Des
Product reference designation (-) of the Advant object. The attribute can not be modified, because it is automatically set.

OCS Item.Des
(Open) Control System Item designation (Absolute Address) (#) of the Advant object. The attribute can not be modified, because it is automatically set.

Free Des.
Free identifying designation of the Advant object. The value in this field depends on the setting in the **Des. Rule** field. The value is automatically updated during the next synchronization of the object or project. If the designation rule is set to **NOP** the value can be edited freely.

Des. Rule
The designation rule field specifies how to create the identifying designation for the Advant object (displayed in the **Free Des.** field). The possible designation rules can be selected from a list of values.



Des.Rule: ID1

(=)FUNC (REPLACE(FUNCDES,'=',''))
+ (LOCDES)
- (PRODDES)
= (FUNCDES)
=+- (FUNCDES || LOCDES || PRODDES)
ID1 (ID1)
ID2 (ID2)
NOP (FREEDES)

Figure 3-82. Designation Rule

The following designation rules can be selected:

- **=(FUNC)**: use value in **Func.Ref.Des** and remove ’=’ signs in designation
- **+** : use value in **Loc.Ref.Des.**
- **-** : use value in **Prod.Ref.Des.**
- **=** : use value in **Func.Ref.Des.**
- **ID1** : use value for **Customer Id** from Structure Builder
- **ID2** : use value for **Mechanical Id** from Structure Builder
- **NOP** : allows to edit the designation

Dialog Controls for Descriptive Data (Page 1)

Category
The **Category** can be defined in 2 levels. The main category (Category 1) and the second level category (Category 2) can be selected from a list of values. The second level category values are depending on the main category selection. For a list of possible values of the main and the second level category refer to Appendix A of the elMaster project administrator User’s Manual.

Denom. 1, Denom. 2, Denom. 3
Descriptive names for the Advant object

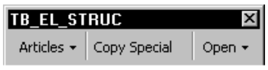
Remark 1, Remark 2
Remarks for the Advant object

Descr. 1
Description text of the Advant object

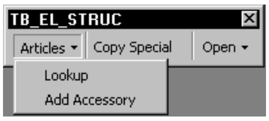
Dialog Controls for Free Data (Page 2)

Free01 ... Free09
Fields for free use

Toolbar Commands



Articles



Open

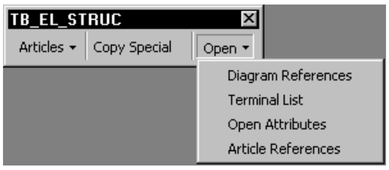


Figure 3-83. Electrical Structure Toolbar

Articles | Lookup
Opens the Article Navigation dialog (see Section 3.7.2.6, Article Navigation Dialog)

Articles | Add Accessory
Adds the selected article as accessory to the selected aspect.

Copy Special
Opens the **Copy Special** toolbar (see Section 3.7.2.3, Copy Special Toolbar)

Open | DiagramReferences
Opens the Document to Object Relationships dialog to display diagram references associated to the selected aspect (see Section 3.7.2.22, Document to Object Relation Dialog)

Open | Open Attributes
Opens the dialog in form view for the selected El.Structure aspect

Open | Terminal List
Opens the Terminal List dialog in datasheet view to display the terminals associated to the selected aspect (see Section 3.7.2.16, Terminal List Dialog)

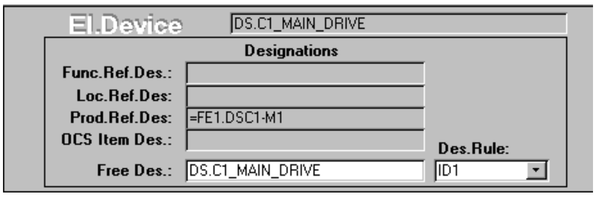
Open | Article References
Opens the Article Reference List dialog to display the article references associated to the selected aspect (see Section 3.7.2.17, Article Reference List Dialog)

3.7.2.10 Electrical Device Dialog

The Electrical Device aspect (internal name **EL_DEVICE**) is used for electrical plant objects representing an electrical device or component. Advant objects with an Electrical Device aspect will be shown in the apparatus/parts list. The dialog on El. Device aspects can be used in form or datasheet view.

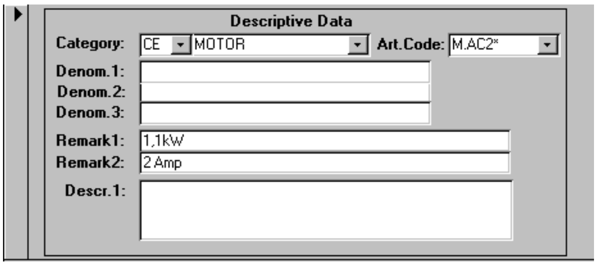
The form consists of a header section, 3 pages and the footer section

Header Section



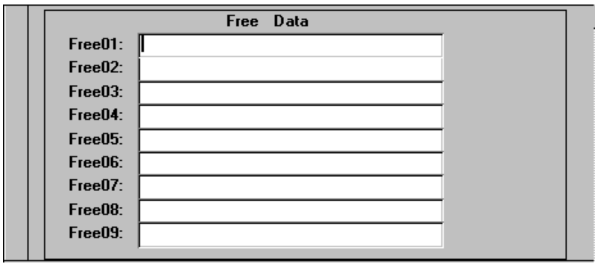
El.Device: DS.C1_MAIN_DRIVE
Func.Ref.Des.:
Loc.Ref.Des:
Prod.Ref.Des: =FE1.DSC1-M1
OCS Item Des.:
Free Des.: DS.C1_MAIN_DRIVE
Des.Rule: ID1

Page 1



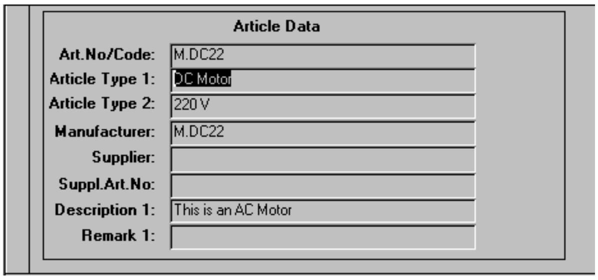
Category: CE MOTOR
Art.Code: M.AC2*
Denom.1:
Denom.2:
Denom.3:
Remark1: 1,1kW
Remark2: 2 Amp
Descr.1:

Page 2



Free01:
Free02:
Free03:
Free04:
Free05:
Free06:
Free07:
Free08:
Free09:

Page 3



Art.No/Code: M.DC22
Article Type 1: DC Motor
Article Type 2: 220 V
Manufacturer: M.DC22
Supplier:
Suppl.Art.No:
Description 1: This is an AC Motor
Remark 1:

Figure 3-84. Electrical Device Dialog

Dialog Controls for Designations (Header Section)

Func.Ref.Des
Function reference designation (=) of the Advant object. The attribute can not be modified, because it is automatically set.

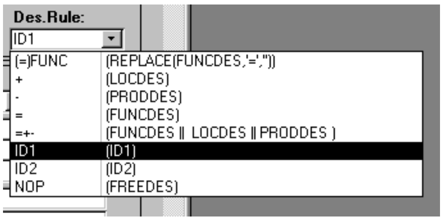
Loc.Ref.Des
Mounting location reference designation (+) of the Advant object. The attribute can not be modified, because it is automatically set.

Prod.Ref.Des
Product reference designation (-) of the Advant object. The attribute can not be modified, because it is automatically set.

OCS Item.Des
(Open) Control System Item designation (Absolute Address) (#) of the Advant object. The attribute can not be modified, because it is automatically set.

Free Des.
Free identifying designation of the Advant object. The value in this field depends on the setting in the **Des. Rule** field. The value is automatically updated during the next synchronization of the object or project. If the designation rule is set to **NOP** the value can be edited freely.

Des. Rule
The designation rule field specifies how to create the identifying designation for the Advant object (displayed in the **Free Des.** field). The possible designation rules can be selected from a list of values.



```
Des.Rule:
ID1
(=)FUNC   (REPLACE(FUNCDES,'=',''))
+         (LOCDES)
-         (PRODDES)
=         (FUNCDES)
=+-       (FUNCDES ||  LOCDES || PRODDES )
ID1       (ID1)
ID2       (ID2)
NOP       (FREEDES)
```

Figure 3-85. Designation Rule

The following designation rules can be selected:

- **=(FUNC)**: use value in **Func.Ref.Des** and remove '=' signs in designation
- **+** : use value in **Loc.Ref.Des.**
- **-** : use value in **Prod.Ref.Des.**
- **=** : use value in **Func.Ref.Des.**
- **ID1**: use value for **Customer Id** from Structure Builder
- **ID2**: use value for **Mechanical Id** from Structure Builder
- **NOP**: allows to edit the designation

Dialog Controls for Descriptive Data (Page 1)

Category
The **Category** can be defined in 2 levels. The main category (Category 1) and the second level category (Category 2) can be selected from a list of values. The second level category values are depending on the main category selection. For a list of possible values of the main and the second level category refer to Appendix A of the elMaster project administrator User's Manual.

Art. Code
The **Article Code** is used to specify selection criteria for the command **Lookup Article.** The value in this field specifies filter criteria for the field **Art.No/Code** in the article library. The wildcard characters '*, %, ?, _' can be used.

Denom. 1, Denom. 2, Denom. 3
Descriptive names for the Advant object

Remark 1, Remark 2
Remarks for the Advant object

Descr. 1
Description text of the Advant object

Dialog Controls for Free Data (Page 2)

Free01 ... Free09
Fields for free use

Dialog Controls for Article Data (Page 3)

NOTE

> Article data is displayed only, if a main article reference exists for the selected aspect. All fields are display only.

Art.No/Code
Article Code to be used for the selection of articles from the article library

Article Type 1, Article Type 2
Article type designations

Manufacturer
Name of the manufacturer of the article

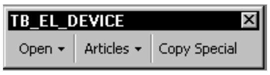
Supplier
Name of the supplier of the article

Suppl.Art.No
Article number used by supplier

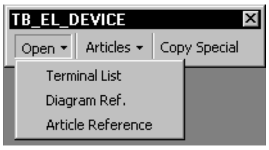
Description 1
Description of the article type

Remark 1
Remark field, used for technical/electrical data of the article type

Toolbar Commands



Open



Articles

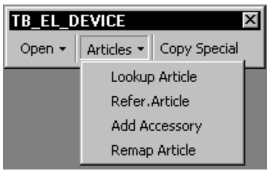


Figure 3-86. Electrical Device Toolbar

Articles | Lookup Article
Opens the Article Navigation dialog (see Section 3.7.2.6, Article Navigation Dialog)

Articles | Refer Article
Adds the selected article as main article to the selected aspect

Articles | Add Accessory
Adds the selected article as accessory to the selected aspect.

Articles | Remap Article
Removes the main article reference and adds the selected article as main article to the selected aspect

Copy Special
Opens the **Copy Special** toolbar (see Section 3.7.2.3, Copy Special Toolbar)

Open | DiagramReferences
Opens the **Document to Object Relation** dialog to display diagram references associated to the selected aspect (see Section 3.7.2.22, Document to Object Relation Dialog)

Open | Article References
Opens the Article Reference List dialog to display all article references for the selected aspect (see Section 3.7.2.17, Article Reference List Dialog)

Open | Terminal List
Opens the Terminal List dialog in datasheet view to display the terminals associated to the selected aspect (see Section 3.7.2.16, Terminal List Dialog)

3.7.2.11 Electrical Function Dialog

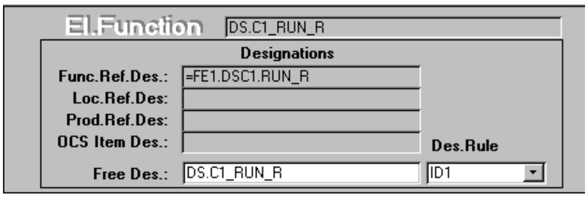
The Electrical Function aspect (internal name **EL_FUNC**) is used for electrical plant objects representing a:

- function implemented by a channel of an electrical device, i.e. I/O channels, recorder channels, etc.
- electrical signal related to electrical connections

The dialog on Electrical Function aspects can be used in form or datasheet view.

The form consists of a header section, 2 pages and the footer section

Header Section



El.Function DS.C1_RUN_R

Designations

Func.Ref.Des.: =FE1.DSC1.RUN_R

Loc.Ref.Des:

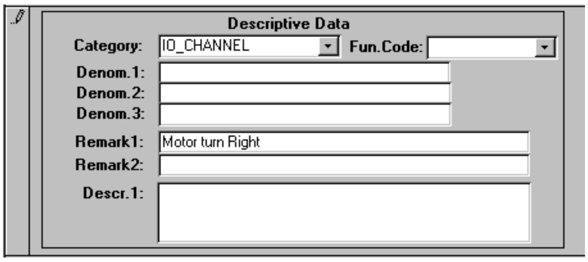
Prod.Ref.Des:

OCS Item Des.:

Des.Rule

Free Des.: DS.C1_RUN_R ID1

Page 1



Descriptive Data

Category: IO_CHANNEL

Fun.Code:

Denom.1:

Denom.2:

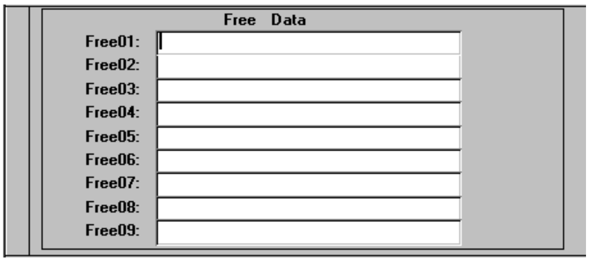
Denom.3:

Remark1: Motor turn Right

Remark2:

Descr.1:

Page 2



Free Data

Free01:

Free02:

Free03:

Free04:

Free05:

Free06:

Free07:

Free08:

Free09:

Figure 3-87. Electrical Function Dialog

Dialog Controls for Designations (Header Section)

Func.Ref.Des
Function reference designation (=) of the Advant object. The attribute can not be modified, because it is automatically set.

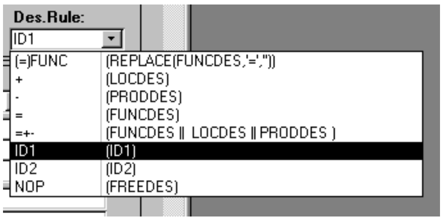
Loc.Ref.Des
Mounting location reference designation (+) of the Advant object. The attribute can not be modified, because it is automatically set.

Prod.Ref.Des
Product reference designation (-) of the Advant object. The attribute can not be modified, because it is automatically set.

OCS Item.Des
(Open) Control System Item designation (Absolute Address) (#) of the Advant object. The attribute can not be modified, because it is automatically set.

Free Des.
Free identifying designation of the Advant object. The value in this field depends on the setting in the **Des. Rule** field. The value is automatically updated during the next synchronization of the object or project. If the designation rule is set to **NOP** the value can be edited freely.

Des. Rule
The designation rule field specifies how to create the identifying designation for the Advant object (displayed in the **Free Des.** field). The possible designation rules can be selected from a list of values.



Des.Rule: ID1

(=)FUNC	(REPLACE(FUNCDES,'=',''))
+	(LOCDES)
-	(PRODDES)
=	(FUNCDES)
=+-	(FUNCDES || LOCDES || PRODDES)
ID1	(ID1)
ID2	(ID2)
NOP	(FREEDES)

Figure 3-88. Designation Rule

The following designation rules can be selected:

- **=(FUNC)**: use value in **Func.Ref.Des** and remove ’=’ signs in designation
- **+** : use value in **Loc.Ref.Des.**
- **-** : use value in **Prod.Ref.Des.**
- **=** : use value in **Func.Ref.Des.**
- **ID1**: use value for **Customer Id** from Structure Builder
- **ID2** : use value for **Mechanical Id** from Structure Builder
- **NOP**: allows to edit the designation

Dialog Controls for Descriptive Data (Page 1)

Category
The **Category** field represents the second level category (Category 2) and can be selected from a list of values. The second level category values are depending on the main category selection.

For a list of possible values of the main and the second level category refer to Appendix A of the elMaster project administrator User’s Manual.

NOTE

For Electrical Function aspects the main category is always CE (Electrical Component)

Fun. Code
The **Function Code** can be used refine the category of object. It is helpful as additional filter criteria for user defined queries. You can use your own settings for this field.

Denom. 1, Denom. 2, Denom. 3
Descriptive names for the Advant object

Remark 1, Remark 2
Remarks for the Advant object

Descr. 1
Description text of the Advant object

Dialog Controls for Free Data (Page 2)

Free01 ... Free09
Fields for free use

Toolbar Commands

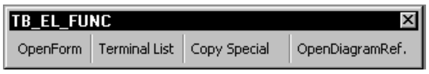


Figure 3-89. Electrical Function Toolbar

Open Form
Opens the form view for the selected aspect

Terminal List
Opens the Terminal List dialog in datasheet view to display the terminals associated to the selected aspect (see Section 3.7.2.16, Terminal List Dialog)

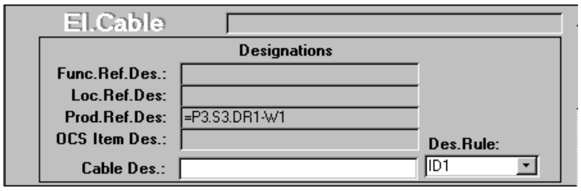
Copy Special
Opens the **Copy Special** toolbar (see Section 3.7.2.3, Copy Special Toolbar)

Open DiagramRef.
Opens the **Document to Object Relation** dialog to display document references associated to the selected aspect (see Section 3.7.2.22, Document to Object Relation Dialog)

3.7.2.12 Electrical Cable Dialog

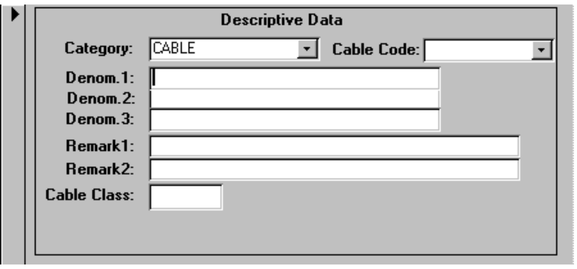
The Electrical Cable aspect (internal name **EL_CABLE**) is used for electrical plant objects representing an electrical or optical cable. Advant objects with an Electrical Cable aspect will be shown in the cable list. The dialog on Electrical Cable aspects can be used in form or datasheet view. The form consists of a header section, 4 pages and a footer section.

Header Section



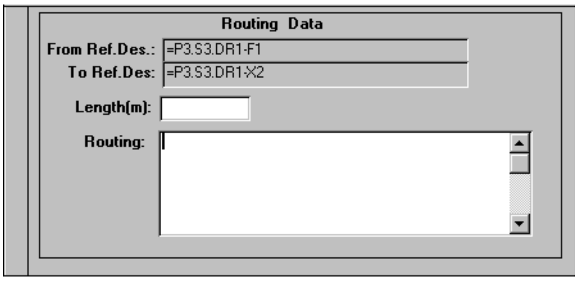
Func.Ref.Des.:
Loc.Ref.Des:
Prod.Ref.Des: =P3.S3.DR1-W1
OCS Item Des.:
Cable Des.:
Des.Rule: ID1

Page 1



Category: CABLE
Cable Code:
Denom.1:
Denom.2:
Denom.3:
Remark1:
Remark2:
Cable Class:

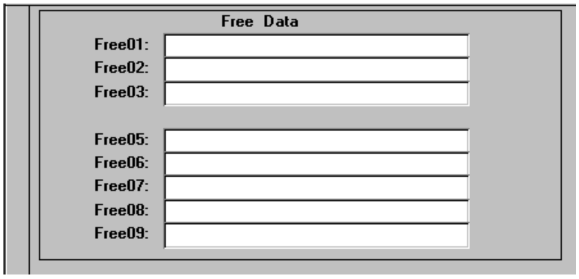
Page 2



From Ref.Des.: =P3.S3.DR1-F1
To Ref.Des: =P3.S3.DR1-X2
Length(m):
Routing:

Figure 3-90. Electrical Cable Dialog

Page 3

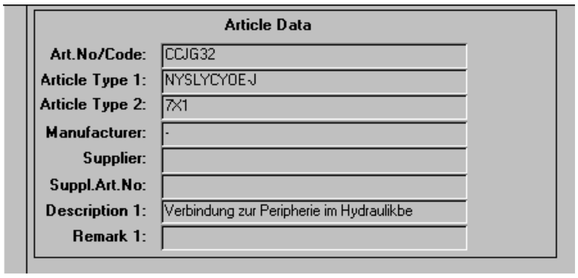


Free Data

Free01:
Free02:
Free03:

Free05:
Free06:
Free07:
Free08:
Free09:

Page 4



Article Data

Art.No/Code: CCJG32
Article Type 1: NYSLYCYOE-J
Article Type 2: 7X1
Manufacturer: -
Supplier:
Suppl.Art.No:
Description 1: Verbindung zur Peripherie im Hydraulikbe
Remark 1:

Figure 3-91. Electrical Cable Dialog (cont.)

Dialog Controls for Designations (Header Section)

Func.Ref.Des
Function reference designation (=) of the Advant object. The attribute can not be modified, because it is automatically set.

Loc.Ref.Des
Mounting location reference designation (+) of the Advant object. The attribute can not be modified, because it is automatically set.

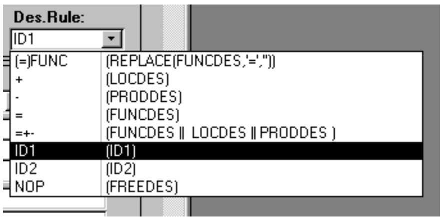
Prod.Ref.Des
Product reference designation (-) of the Advant object. The attribute can not be modified, because it is automatically set.

OCS Item.Des
(Open) Control System Item designation (Absolute Address) (#) of the Advant object. The attribute can not be modified, because it is automatically set.

Cable Des.
Cable identifying designation of the Advant object. The value in this field depends on the setting in the **Des. Rule** field. The value is automatically updated during the next synchronization of the object or project. If the designation rule is set to **NOP** the value can be edited freely.

Des. Rule
The designation rule field specifies how to create the identifying designation for the Advant

object (displayed in the **Cable Des.** field). The possible designation rules can be selected from a list of values.



Des.Rule: ID1

(=)FUNC	(REPLACE(FUNCDES,'=',''))
+	(LOCDES)
-	(PRODDES)
=	(FUNCDES)
=+-	(FUNCDES || LOCDES || PRODDES)
ID1	(ID1)
ID2	(ID2)
NOP	(FREEDES)

Figure 3-92. Designation Rule

The following designation rules can be selected:

- **=(FUNC)**: use value in **Func.Ref.Des** and remove '=' signs in designation
- **+** : use value in **Loc.Ref.Des.**
- **-** : use value in **Prod.Ref.Des.**
- **=** : use value in **Func.Ref.Des.**
- **ID1**: use value for **Customer Id** from Structure Builder
- **ID2**: use value for **Mechanical Id** from Structure Builder
- **NOP**: allows to edit the designation

Dialog Controls for Descriptive Data (Page 1)

Category
The **Category** is the second level category (Category 2) and can be selected from a list of values. The second level category values are depending on the main category selection. For a list of possible values of the main and the second level category refer to Appendix A of the elMaster project administrator User's Manual.

NOTE

For Electrical Cables the main category is always CA (Cable

Cable Code
The **Cable Code** is used to specify selection criteria for the command **Lookup Article.** The value in this field specifies filter criteria for the field **Art.No/Code** in the article library. The wildcard characters '*, %, ?, _' can be used.

Denom. 1, Denom. 2, Denom. 3
Descriptive names for the Advant object

Remark 1, Remark 2
Remarks for the Advant object

Cable Class
The **Cable Class** specifies the kind of cable, e.g. a power cable, control cable, etc.

Dialog Controls for Routing Data (Page 2)

From Ref.Des
Reference designation of from-side plant object. The attribute is read-only in this dialog

To Ref.Des
Reference designation of to-side plant object. The attribute is read-only in this dialog

Length(m)
Length of the cable in meters

Routing
Routing information, i.e. a list of topological nodes describing the cable route

Dialog Controls for Free Data (Page 3)

Free01 ... Free03, Free05 ... Free09
Fields for free use

NOTE

> The field **Free04** is not available in this dialog because for electrical cables this field is used for **Cable Class**

Dialog Controls for Article Data (Page 4)

NOTE

> Article data is displayed only, if a main article reference exists for the selected aspect. All fields are display only.

Art.No/Code
Article Code to be used for the selection of articles from the article library

Article Type 1, Article Type 2
Article type designations

Manufacturer
Name of the manufacturer of the article

Supplier
Name of the supplier of the article

Suppl.Art.No
Article number used by supplier

Description 1
Description of the article type

Remark 1
Remark field, used for technical/electrical data of the article type

Toolbar Commands

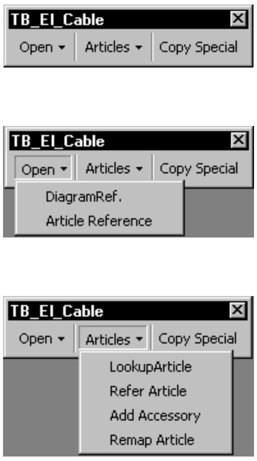


Figure 3-93. Electrical Cable Toolbar

Articles | Lookup Article
Opens the Article Navigation dialog (see Section 3.7.2.6, Article Navigation Dialog)

Articles | Refer Article
Adds the selected article as main article to the selected aspect

Articles | Add Accessory
Adds the selected article as accessory to the selected aspect.

Articles | Remap Article
Removes the main article reference and adds the selected article as main article to the selected aspect

Copy Special
Opens the **Copy Special** toolbar (see Section 3.7.2.3, Copy Special Toolbar)

Open | DiagramReferences
Opens the **Document to Object Relation** dialog to display diagram references associated to the selected aspect (see Section 3.7.2.22, Document to Object Relation Dialog)

Open | Article References
Opens the Article Reference List dialog to display all article references for the selected aspect (see Section 3.7.2.17, Article Reference List Dialog)

3.7.2.13 Electrical Objects Dialog

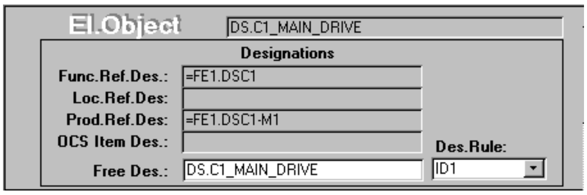
The Electrical Objects displays a summary of the electrical aspects:

- Electrical Structure
- Electrical Device
- Electrical Function

- Electrical Cable

The dialog on Electrical Object can be used in form or datasheet view. The form consists of a header section, 2 pages and the footer section

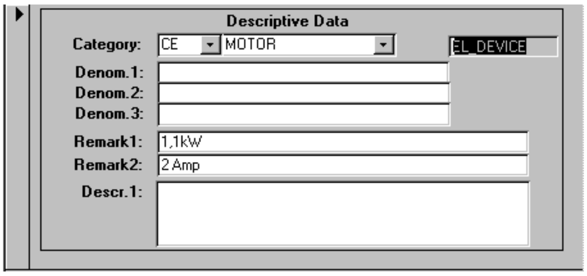
Header Section



DS.C1_MAIN_DRIVE

Func.Ref.Des.: =FE1.DSC1
Loc.Ref.Des:
Prod.Ref.Des: =FE1.DSC1-M1
OCS Item Des.:
Free Des.: DS.C1_MAIN_DRIVE
Des.Rule: ID1

Page 1



Category: CE MOTOR EL_DEVICE
Denom.1:
Denom.2:
Denom.3:
Remark1: 1,1kW
Remark2: 2 Amp
Descr.1:

Page 2

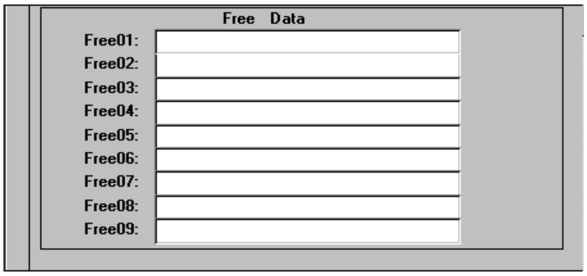
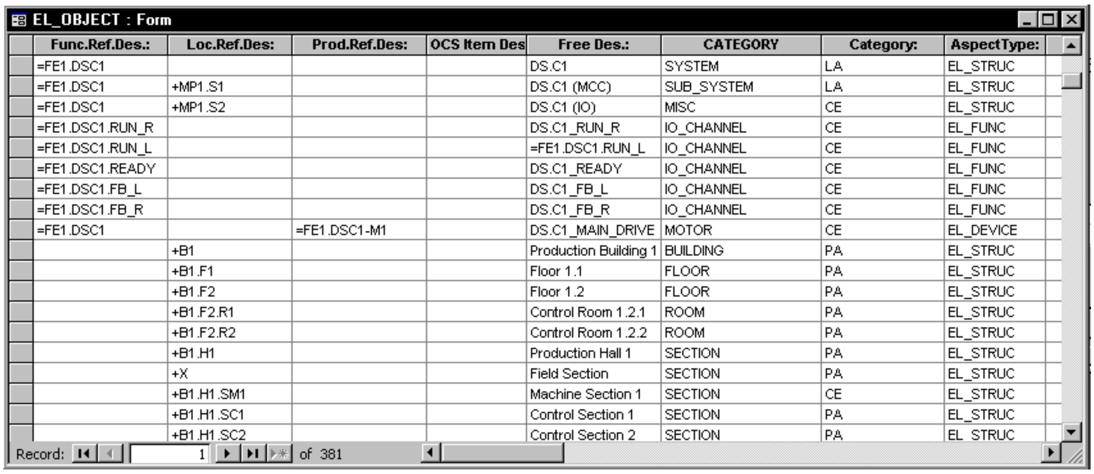


Figure 3-94. Electrical Objects Dialog - Form View



Func.Ref.Des.:	Loc.Ref.Des:	Prod.Ref.Des:	OCS Item Des	Free Des.:	CATEGORY	Category:	AspectType:
=FE1.DSC1				DS.C1	SYSTEM	LA	EL_STRUC
=FE1.DSC1	+MP1.S1			DS.C1 (MCC)	SUB_SYSTEM	LA	EL_STRUC
=FE1.DSC1	+MP1.S2			DS.C1 (IO)	MISC	CE	EL_STRUC
=FE1.DSC1.RUN_R				DS.C1_RUN_R	IO_CHANNEL	CE	EL_FUNC
=FE1.DSC1.RUN_L				=FE1.DSC1.RUN_L	IO_CHANNEL	CE	EL_FUNC
=FE1.DSC1.READY				DS.C1_READY	IO_CHANNEL	CE	EL_FUNC
=FE1.DSC1.FB_L				DS.C1_FB_L	IO_CHANNEL	CE	EL_FUNC
=FE1.DSC1.FB_R				DS.C1_FB_R	IO_CHANNEL	CE	EL_FUNC
=FE1.DSC1		=FE1.DSC1-M1		DS.C1_MAIN_DRIVE	MOTOR	CE	EL_DEVICE
	+B1			Production Building 1	BUILDING	PA	EL_STRUC
	+B1.F1			Floor 1.1	FLOOR	PA	EL_STRUC
	+B1.F2			Floor 1.2	FLOOR	PA	EL_STRUC
	+B1.F2.R1			Control Room 1.2.1	ROOM	PA	EL_STRUC
	+B1.F2.R2			Control Room 1.2.2	ROOM	PA	EL_STRUC
	+B1.H1			Production Hall 1	SECTION	PA	EL_STRUC
	+X			Field Section	SECTION	PA	EL_STRUC
	+B1.H1.SM1			Machine Section 1	SECTION	CE	EL_STRUC
	+B1.H1.SC1			Control Section 1	SECTION	PA	EL_STRUC
	+B1.H1.SC2			Control Section 2	SECTION	PA	EL_STRUC

Record: 1 of 381

Figure 3-95. Electrical Objects Dialog - Datasheet View

Dialog Controls for Designations (Header Section)

Func.Ref.Des
Function reference designation (=) of the Advant object. The attribute can not be modified, because it is automatically set.

Loc.Ref.Des
Mounting location reference designation (+) of the Advant object. The attribute can not be modified, because it is automatically set.

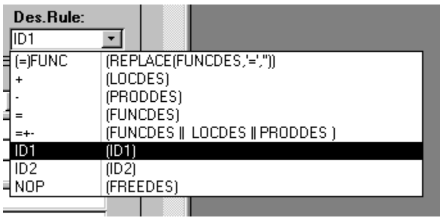
Prod.Ref.Des
Product reference designation (-) of the Advant object. The attribute can not be modified, because it is automatically set.

OCS Item.Des
(Open) Control System Item designation (Absolute Address) (#) of the Advant object. The attribute can not be modified, because it is automatically set.

Free Des.
Free identifying designation of the Advant object. The value in this field depends on the setting in the **Des. Rule** field. The value is automatically updated during the next synchronization of the object or project. If the designation rule is set to **NOP** the value can be edited freely.

Des. Rule
The designation rule field specifies how to create the identifying designation for the Advant

object (displayed in the **Free Des.** field). The possible designation rules can be selected from a list of values.



Des.Rule: ID1

(=)FUNC	(REPLACE(FUNCDES,'=',''))
+	(LOCDES)
-	(PRODDES)
=	(FUNCDES)
=+-	(FUNCDES || LOCDES || PRODDES)
ID1	(ID1)
ID2	(ID2)
NOP	(FREEDES)

Figure 3-96. Designation Rule

The following designation rules can be selected:

- **=(FUNC)**: use value in **Func.Ref.Des** and remove the leading ’=’ sign
- **+** : use value in **Loc.Ref.Des.**
- **-** : use value in **Prod.Ref.Des.**
- **=** : use value in **Func.Ref.Des.**
- **ID1**: use value for **Customer Id** from Structure Builder
- **ID2**: use value for **Mechanical Id** from Structure Builder
- **NOP**: allows to edit the designation

Dialog Controls for Descriptive Data (Page 1)

Category
The **Category** can be defined in 2 levels. The main category (Category 1) and the second level category (Category 2) can be selected from a list of values. The second level category values are depending on the main category selection. For a list of possible values of the main and the second level category refer to Appendix A of the elMaster project administrator User’s Manual.

Denom. 1, Denom. 2, Denom. 3
Descriptive names for the Advant object

Remark 1, Remark 2
Remarks for the Advant object

Descr. 1
Description text of the Advant object

Dialog Controls for Free Data (Page 2)

Free01 ... Free09
Fields for free use

Toolbar Commands

The toolbar for Electrical Objects is the same as for Electrical Structure aspects see Figure 3-83.

3.7.2.14 Device Article Dialog

The **Device Article** dialog (internal name **ART_EL_DEVICE**) is used for articles representing an electrical device, e.g. motors, sensors, fuses, etc. The Device Article dialog can be used in form or datasheet view. The form consists of a header section, 3 pages and a footer section

Header Section

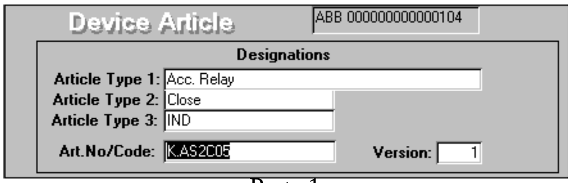
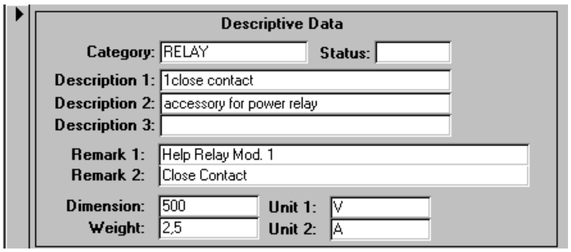


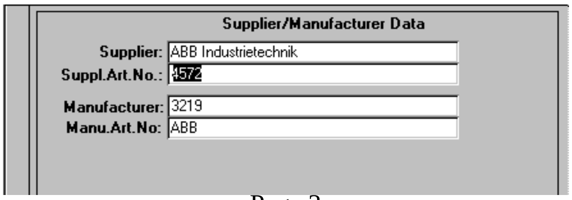
ABB 000000000000104
Article Type 1: Acc. Relay
Article Type 2: Close
Article Type 3: IND
Art.No/Code: K.AS2C05
Version: 1

Page 1



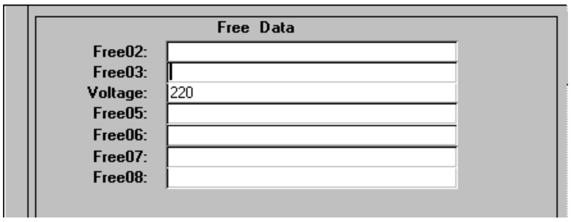
Category: RELAY
Status:
Description 1: 1close contact
Description 2: accessory for power relay
Description 3:
Remark 1: Help Relay Mod. 1
Remark 2: Close Contact
Dimension: 500
Unit 1: V
Weight: 2,5
Unit 2: A

Page 2



Supplier: ABB Industrietechnik
Suppl.Art.No.: 4572
Manufacturer: 3219
Manu.Art.No: ABB

Page 3



Free02:
Free03:
Voltage: 220
Free05:
Free06:
Free07:
Free08:

Figure 3-97. Device Article Dialog

Dialog Controls for Designations (Header Section)

Article Type 1, Article Type 2, Article Type 3
The attributes for Article Type are the identifying type designations of an article. The combination of this attributes is unique within a project.

Art.No/Code
The value in this filed represents the Article Number or Article Code. The attribute can be used as an internal organization specific code for the article.

Version
Version of the article

Dialog Controls for Descriptive Data (Page 1)

Category
Category of article

Status
Article Status

Description 1, Description 2, Description 3
Description fields of the article type

Remark 1, Remark 2
Remark fields, used for technical/electrical data of the article type

Dimension
Dimension of the article

Unit 1
Unit for Dimension field

Weight
Weight of the article

Unit 2
Unit for Weight field

Dialog Controls for Supplier/Manufacturer Data (Page 2)

Supplier
Name of the supplier of the article

Suppl.Art.No
Article number used by supplier

Manufacturer
Name of the manufacturer of the article

Manu.Art.No
Article number used by Manufacturer

Dialog Controls for Free Data (Page 3)

Free02 ... Free03, Free05 ... Free08
Fields for free use

Voltage
Rated voltage for the article

3.7.2.15 Cable Article Dialog

The **Cable Article** dialog (internal name **ART_EL_CABLE**) is used for articles representing an electrical or optical cable. The Cable Article dialog can be used in form or datasheet view. The dialog is a view to the article library for the project. The form consists of a header section, 3 pages and a footer section

Header Section

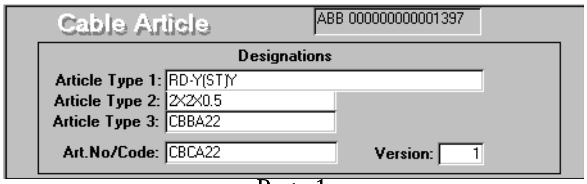
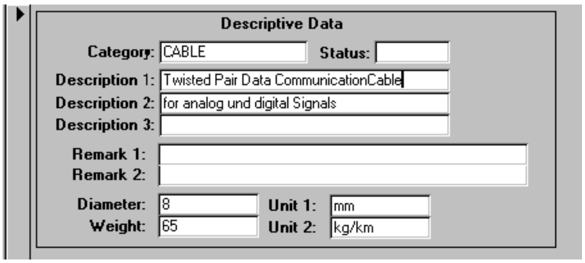


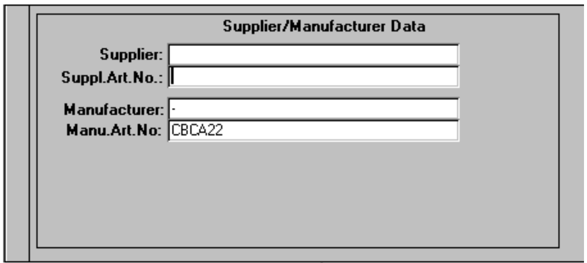
ABB 000000000001397
Article Type 1: RD-Y(ST)Y
Article Type 2: 2X2X0.5
Article Type 3: CBBA22
Art.No/Code: CBCA22
Version: 1

Page 1



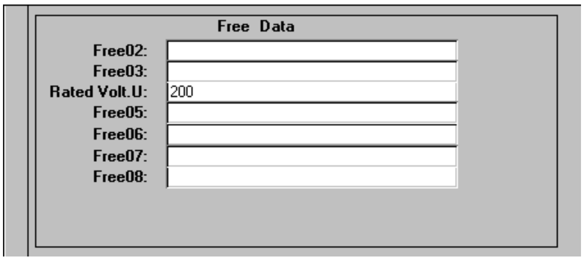
Category: CABLE
Status:
Description 1: Twisted Pair Data CommunicationCable
Description 2: for analog und digital Signals
Description 3:
Remark 1:
Remark 2:
Diameter: 8
Unit 1: mm
Weight: 65
Unit 2: kg/km

Page 2



Supplier:
Suppl.Art.No.:
Manufacturer: -
Manu.Art.No: CBCA22

Page 3



Free02:
Free03:
Rated Volt.U: 200
Free05:
Free06:
Free07:
Free08:

Figure 3-98. Cable Article Dialog

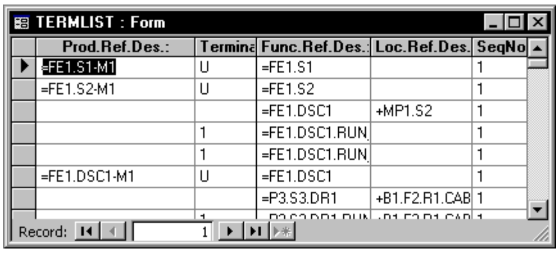
The dialog controls are identical to the Device Article dialog. For a description see Section 3.7.2.14, Device Article Dialog.

3.7.2.16 Terminal List Dialog

The **Terminal List** (internal name **TERMLIST**) dialog provides a list of terminals related to electrical objects and allows to edit the terminal number/designation. Terminals can exist for aspects of type Electrical Structure, Electrical Device or Electrical Function. The selection of terminals follows automatically the selected aspect. If the Terminal List dialog is called from the corresponding toolbar of an electrical aspect, only the terminals belonging to the aspect are displayed.

NOTE

Only the terminal number **Terminal No.** field can be modified in this dialog. The other attributes are for information purpose and can be used for filtering within user defined queries.



Prod.Ref.Des.:	Termina	Func.Ref.Des.:	Loc.Ref.Des.	SeqNo
=FE1.S1-M1	U	=FE1.S1		1
=FE1.S2-M1	U	=FE1.S2		1
		=FE1.DSC1	+MP1.S2	1
	1	=FE1.DSC1.RUN		1
	1	=FE1.DSC1.RUN		1
=FE1.DSC1-M1	U	=FE1.DSC1		1
		=P3.S3.DR1	+B1.F2.R1.CAB	1

Figure 3-99. Terminal List Dialog

Dialog Controls:

Terminal No.
Terminal Number/Designation

Prod.Ref.Des, Func.Ref.Des, Loc.Ref.Des., OCSRef.Des
Reference Designation, cannot be edited

Object Name 1
Object Name 1 (ID1), cannot be edited

Aspect Type
Aspect Type, cannot be edited

SeqNo
Sequence number for the terminals, cannot be edited

Signal
Signal name connected to the terminal, cannot be edited

Max. Area
Maximum area for the cable connection, cannot be edited

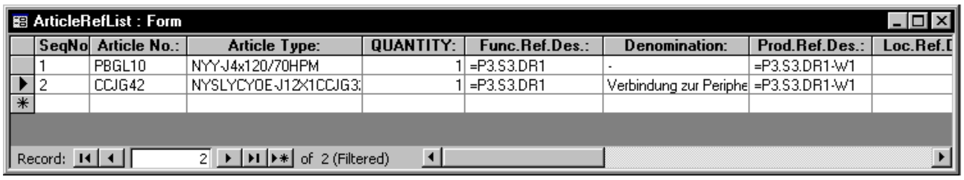
Max.No.Conn.
Maximum number of cable connections, cannot be edited

3.7.2.17 Article Reference List Dialog

The **Article Reference List** dialog allows to:

- View article references for an aspect types Electrical Device, Electrical Structure or Electrical Cable
- Edit the **QUANTITY** field for articles
- Delete article references
  To delete a reference select the record with the Record Selection button and select **Edit | Delete** from the menu

allocated to Advant objects.



SeqNo	Article No.:	Article Type:	QUANTITY:	Func.Ref.Des.:	Denomination:	Prod.Ref.Des.:	Loc.Ref.
1	PBGL10	NYY-J4x120/70HPM	1	=P3.S3.DR1	-	=P3.S3.DR1-W1	
2	CCJG42	NYSLYCYOE-J12X1CCJG3	1	=P3.S3.DR1	Verbindung zur Periphe	=P3.S3.DR1-W1	

Figure 3-100. Article Reference List Dialog

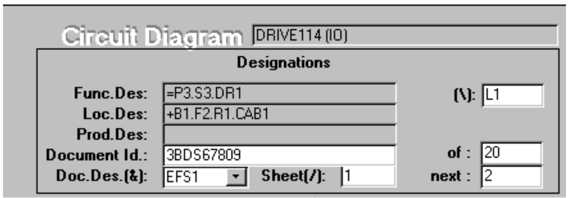
NOTE

All fields (except the **QUANTITY** field) in this dialog are display only and cannot be modified.

3.7.2.18 Circuit Diagram Dialog

The **Circuit Diagram** aspect (internal name **CI_DIA**) represents one sheet of an electrical circuit diagram. The dialog can be used in form or datasheet view. The form consists of a header section, 3 pages and a footer section.

Header Section

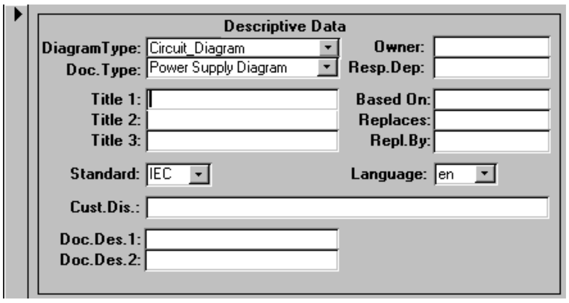


Circuit Diagram DRIVE114 (IO)

Designations

Func.Des: =P3.S3.DR1
Loc.Des: +B1.F2.R1.CAB1
Document Id.: 3BDS67809
Doc.Des.(&): EFS1
Sheet(/): 1
(\): L1
of : 20
next : 2

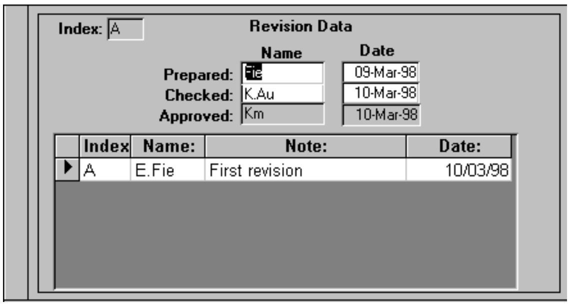
Page 1



Descriptive Data

DiagramType: Circuit_Diagram
Doc.Type: Power Supply Diagram
Standard: IEC
Language: en

Page 2



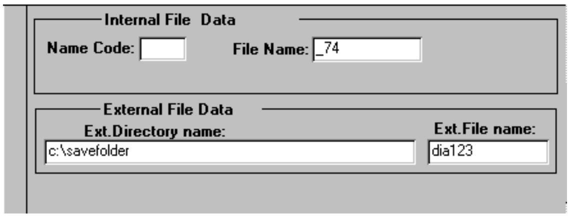
Index: A

Revision Data

	Name	Date
Prepared:	Fie	09-Mar-98
Checked:	K.Au	10-Mar-98
Approved:	Km	10-Mar-98

Index	Name:	Note:	Date:
A	E.Fie	First revision	10/03/98

Page 3



Internal File Data

File Name: _74

External File Data

Ext.Directory name: c:\savefolder
Ext.File name: dia123

Figure 3-101. Circuit Diagram Dialog

Dialog Controls for Designations (Header Section)

Func.Des
Function reference designation (=) of the Advant object. The attribute can not be modified, because it is automatically set.

(\)
Sheet number related to Function reference designation (internal name SHEETNOB)

Loc.Des
Mounting location reference designation (+) of the Advant object. The attribute can not be modified, because it is automatically set.

Prod.Des
Product reference designation (-) of the Advant object. The attribute can not be modified, because it is automatically set.

Document Id
Document identifier/number

Doc.Des.(&)
Document Designation Code. Possible values can be selected from a list of values.

Sheet(/)
Sheet number related to Document identifier/number

of
Number of sheets

next
Next sheet

Dialog Controls for Descriptive Data (Page 1)

Diagram Type
Defines the type of circuit diagram. Possible values can be selected from a list of values.

Doc.Type
Document Type Description. Possible values can be selected from a list of values. For some values of the Document Designation Code **Doc.Des.** the value of this field is set automatically.

Title 1, Title 2, Title 3
Document Title attributes

Standard
Drawing standard used for diagram

Language:
Language used in diagram

Cust.Dis.
Customer specific data like document number used by customer

Doc.Des. 1, Doc.Des. 2
Customer specific diagram designations

Owner
Legal owner of document

Resp.Dep.
Responsible department

Based On
Origin the document was based on

Replaces
Document, which is replaced by this diagram

Repl. by
Document, which replaces this diagram

Dialog Controls for Revision Data (Page 2)

Index
Index displays the current revision index for the document/diagram

Prepared Name, Date
Name and Date of the person preparing the document

Checked Name, Date
Name and Date of the person checking the document

Approved Name, Date
Name and Date of the person approving the document. This field is display only and cannot be modified. A document must be approved using the corresponding elMaster project functions.

Revision Index / Name / Date / Note
Revision data related to each revision of the document. These fields are displayed only and cannot be modified. New revisions must be created using the corresponding elMaster project functions.

Dialog Controls for File Administration (Page 3)

Name Code
The **Name Code** is a prefix used to generate a unique file name. If no **Name Code** is defined the character ’_’ will be used as default.

File Name
The File Name is the name of the file on disc. The name can be set manually. If the name is not set before opening the diagram the first time, it will be generated automatically using the **Name Code** and a unique sequence number.

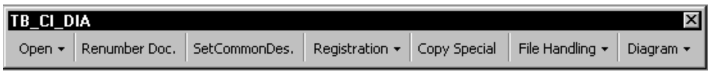
Ext. Directory Name:
Name of an external directory (not within directory structure for project data) used for attaching and detaching diagrams. Double click the field to open the **File Selection** dialog.

Ext. File Name
Name of an external file used for attaching and detaching diagrams. Double click the field to open the **File Selection** dialog.

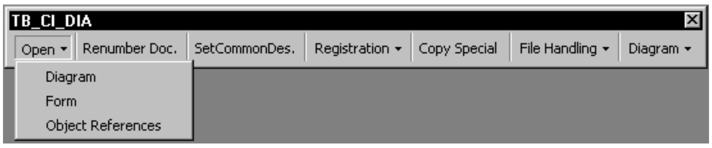
WARNING

The values must be saved to the database using the Record Selection button

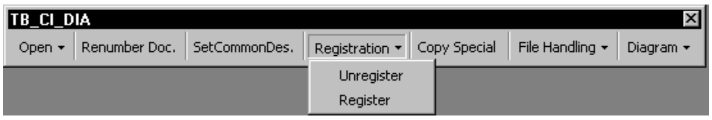
Toolbar Commands



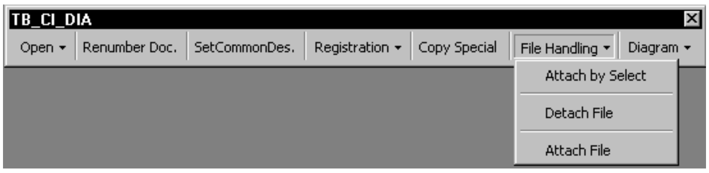
Open



Registration



File Handling



Diagram

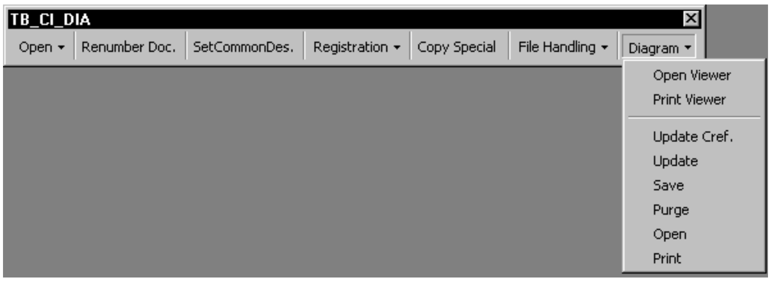


Figure 3-102. Circuit Diagram Toolbar

Open | Diagram
Opens the Circuit Diagram using *el*Master design

Open | Form
Opens Circuit Diagram dialog in form view on selected aspect

Open | Object References
Opens the **Document to Object Relation** dialog to display document references associated to the selected aspect (see Section 3.7.2.22, Document to Object Relation Dialog)

Renumber Doc.
Opens the **Document Numbering** dialog (see Section 3.7.2.23, Document Numbering Dialog)

SetCommonDes.
With this function you can select the values for the common reference designation from drawings imported/attached via *el*Master project to store them in the database. This function does not have an effect for drawings created from the Structure Builder.

Registration | Register
Registers the aspect to an existing Advant Object.

Registration | Unregister
function not available in this version

Copy Special
Opens the **Copy Special** toolbar (see Section 3.7.2.3, Copy Special Toolbar)

File Handling | Attach by Select
Opens the File Selection dialog. You can select a file to be attached to the currently selected aspect.

File Handling | Detach File
Performs a detach of the drawing file using the settings for **Ext. Directory Name** and **Ext. File Name** in the **Circuit Diagram** dialog

File Handling | Attach File
Performs a attach of the drawing file using the settings for **Ext. Directory Name** and **Ext. File Name** in the **Circuit Diagram** dialog

Diagram | Open Viewer
Opens the drawing associated to the selected aspect using Autodesk View

Diagram | Print Viewer
Print the drawing associated to the selected aspect using Autodesk View

NOTE

To be able to use the functions **Open Viewer** and **Print Viewer** you need Autodesk View being installed on you PC. Furthermore Autodesk View must be started manually before you can execute the functions.

Diagram | Update Cref.
Performs the function **Update Cross References** for the drawing associated to the selected aspect.

Diagram | Update
Performs the function **Update from Database** for the drawing associated to the selected aspect.

Diagram | Save
Performs the function **Save to Database** for the drawing associated to the selected aspect.

Diagram | Purge
Performs the function **Purge** for the drawing associated to the selected aspect.

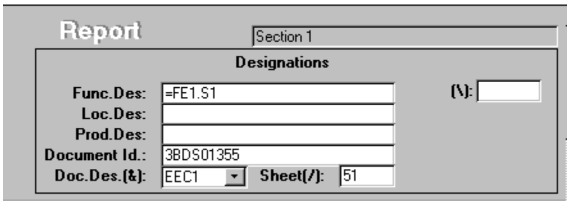
Diagram | Open
Opens the drawing associated to the selected aspect

Diagram | Print
Opens the drawing associated to the selected aspect

3.7.2.19 Report Dialog

The Report aspect (internal name **REPORT**) is used to define and print out reports created with Microsoft Access. The dialog on Report aspects can be used in form or datasheet view. The form consists of a header section, 3 pages and a footer section.

Header Section

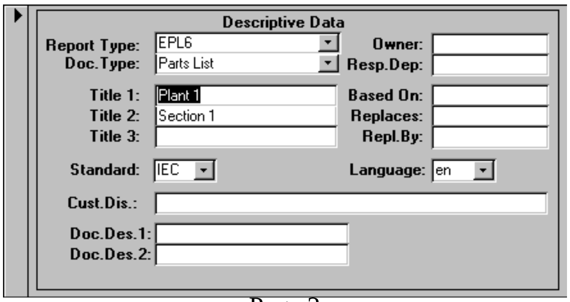


Report: Section 1

Designations

Func.Des: =FE1.S1
Loc.Des:
Prod.Des:
Document Id.: 3BDS01355
Doc.Des.(&): EEC1
Sheet(/): 51
(\):

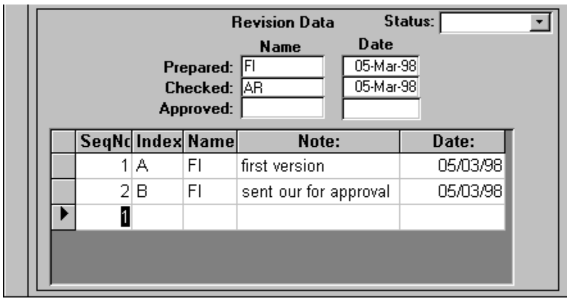
Page 1



Descriptive Data

Report Type: EPL6
Doc.Type: Parts List
Owner:
Resp.Dep:
Title 1: Plant 1
Title 2: Section 1
Title 3:
Based On:
Replaces:
Repl.By:
Standard: IEC
Language: en
Cust.Dis.:
Doc.Des.1:
Doc.Des.2:

Page 2



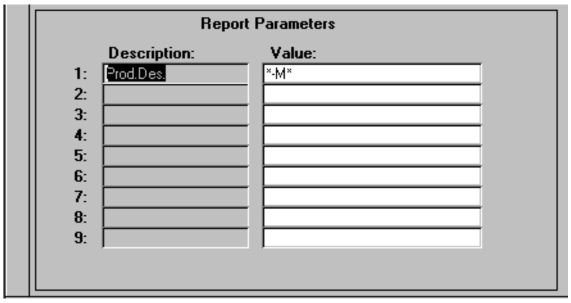
Revision Data

Status:

	Name	Date
Prepared:	FI	05-Mar-98
Checked:	AR	05-Mar-98
Approved:		

SeqNo	Index	Name	Note:	Date:
1	A	FI	first version	05/03/98
2	B	FI	sent our for approval	05/03/98
1				

Page 3



Report Parameters

	Description:	Value:
1:	Prod.Des.	*-M*
2:		
3:		
4:		
5:		
6:		
7:		
8:		
9:		

Figure 3-103. Report Dialog

Dialog Controls for Designations (Header Section)

Func.Des
Function reference designation (=) of the Advant object. The attribute can not be modified, because it is automatically set.

(\)
Sheet number related to Function reference designation

Loc.Des
Mounting location reference designation (+) of the Advant object. The attribute can not be modified, because it is automatically set.

Prod.Des
Product reference designation (-) of the Advant object. The attribute can not be modified, because it is automatically set.

Document Id
Document identification/number

Doc.Des.(&)
Document Designation Code. Possible values can be selected from a list of values.

Sheet(/)
Sheet number related to Document identification

Dialog Controls for Descriptive Data (Page 1)

Report Type
Defines the type of report. Possible values can be selected from a list of values.

Doc.Type
Document Type Description. Possible values can be selected from a list of values. For some values of the Document Designation Code **Doc.Des.** the value of this field is set automatically.

Title 1, Title 2, Title 3
Document Title attributes

Standard
Drawing standard used for document

Language:
Language used in document

Cust.Dis.
Customer specific data like document number used by customer

Doc.Des. 1, Doc.Des. 2
Customer specific document designations

Owner
Legal owner of document

Resp.Dep.
Responsible department

Based On
Origin the document was based on

Replaces
Document, which is replaced by this document

Repl. by
Document, which replaces this document

Dialog Controls for Revision Data (Page 2)

Status
Status of document. Possible values can be selected from a list of values.

Prepared Name, Date
Name and Date of the person preparing the document

Checked Name, Date
Name and Date of the person checking the document

Approved Name, Date
Name and Date of the person approving the document.

Revision Seq.No / Index / Name / Date / Note
Revision data related to each revision of the document

Dialog Controls for Report Parameters (Page 3)

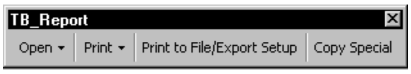
Report parameters can used in the selection criteria for the report (see Section 3.7.2.20, Report Type Dialog).

Parameter Description 1 ... Parameter Description 9
Description of parameters according to report type definition

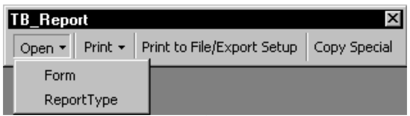
Parameter Value 1 ... Parameter Value 9
Values used in the selection criteria for the report. The following conventions are used when specifying the parameter:

- * is used as wildcard for zero or more characters
- ? is used as wildcard for exactly one character

Toolbar Commands



Open



Print

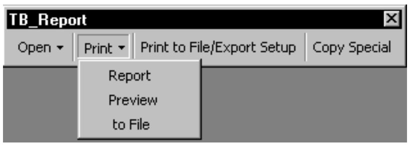


Figure 3-104. Report Toolbar

Open | Form
Opens the **Report** dialog in form view for the selected aspect

Open | Report Type
Opens the **Report Type** dialog in form view for the selected report type (see Section 3.7.2.20, Report Type Dialog)

Print | Report
Creates the report and sends it directly to configured printer. The considerations for printer configuration are described in Section 3.1.3.9, Printer Configuration for EDIB Reports.

Print | Preview
Creates the report and shows the result as preview on the screen

Print | to File
Writes report data to file according predefined format to referenced export directory. The file name is created automatically using the internal key of the report aspect (is visible in datasheet view or if you scroll down in form view)
Note: the data of any sub-report within a report are not included. Footer data will be saved in a separate file

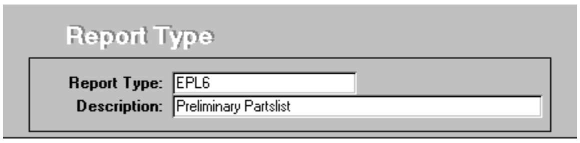
Print to File/Export Setup
Opens the **Data Export** dialog (see Section 3.7.2.24, Data Export Dialog)

Copy Special
Opens the **Copy Special** toolbar (see Section 3.7.2.3, Copy Special Toolbar)

3.7.2.20 Report Type Dialog

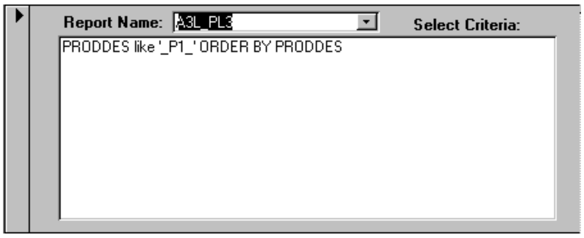
The Report Type dialog is used to define the report types to be used for the report generation.

Header Section



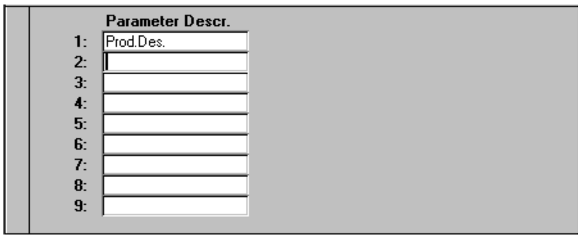
Report Type: EPL6
Description: Preliminary Partslist

Page 1



Report Name: A3L_PL3
Select Criteria:
PRODDES like '_P1_' ORDER BY PRODDES

Page 2



1: Prod.Des.

Figure 3-105. Report Type Dialog

Dialog Controls

Report Type
Name of the report type. Must be unique, because it is used as reference from a **Report** aspect

Description
Description text of the report type

Report Name
Reference to a Microsoft Access report. Available reports can be selected from a list of values.

Select Criteria
The **Select Criteria** is used as additional 'WHERE Condition' and' ORDER BY' clause during printing. Refer to Microsoft Access Help 'Open Report Action' for more details. Report parameters can be referenced by the symbols `'_P1_' .... '_P9_'`. They will be replaced by the actual report parameters specified in the **Report** dialog.

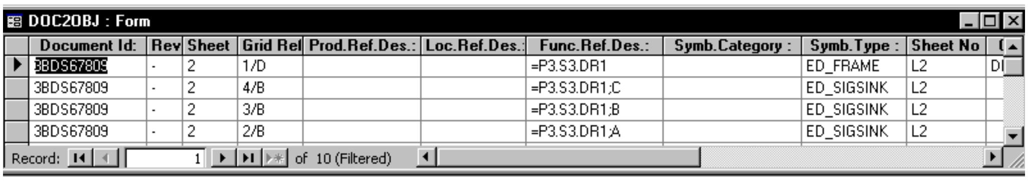
Parameter Descr. 1 ... Parameter Desrc. 9
Description of parameters used for the report type. The descriptions will be shown as report parameter in the **Report** dialog.

3.7.2.21 Electrical Document Dialog

The Electrical Document dialog displays all electrical documents, i.e. aspect types Circuit Diagram and Report in one form. All attributes in this dialog are display only. For the description of the fields in the dialog see Section 3.7.2.18, Circuit Diagram Dialog and Section 3.7.2.19, Report Dialog.

3.7.2.22 Document to Object Relation Dialog

The **Document to Object Relation** dialog lists all references between documents (diagrams) and electrical objects. The fields in this dialog are display only and cannot be modified.



Document Id:	Rev	Sheet	Grid Ref	Prod.Ref.Des.:	Loc.Ref.Des.:	Func.Ref.Des.:	Symb.Category :	Symb.Type :	Sheet No	(
3BDS67809	-	2	1/D			=P3.S3.DR1		ED_FRAME	L2	DI
3BDS67809	-	2	4/B			=P3.S3.DR1;C		ED_SIGSINK	L2	
3BDS67809	-	2	3/B			=P3.S3.DR1;B		ED_SIGSINK	L2	
3BDS67809	-	2	2/B			=P3.S3.DR1;A		ED_SIGSINK	L2	

Figure 3-106. Document to Object Relation Dialog - Datasheet View

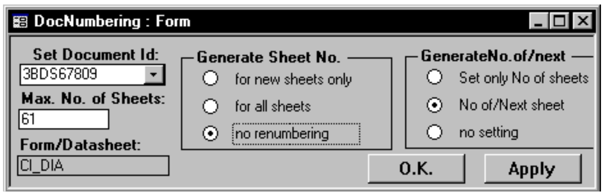
3.7.2.23 Document Numbering Dialog

The **Document Numbering** dialog is used to renumber documents, i.e.

- Set new **Document Id** for the selected sheets
- Set the value for number of sheets **No of Sh.** in all selected sheets
- Generate the sheet number **Sheet(/)** automatically
- Generate the value for **next sheet** automatically

NOTE

All aspects currently selected in the referenced Form/Datasheet are processed by this function



Set Document Id: 3BDS67809
Max. No. of Sheets: 61
Form/Datasheet: CI_DIA

Generate Sheet No.
○ for new sheets only
○ for all sheets
● no renumbering

GenerateNo.of/next
○ Set only No of sheets
● No of/Next sheet
○ no setting

Figure 3-107. Document Numbering Dialog

Dialog Controls

Set Document Id
Defines the new Document Id for the selected sheets

Max. No of Sheets
Defines the value for number of sheets **No of Sh.** The field is set to the maximum number of selected sheets in the **Circuit Diagram** dialog as default.

Form/Datasheet
Displays the active form/datasheet for which the function is performed. The field is display only.

Generate Sheet No.

Click **for new sheets only** to process only the new sheets

Click **for all sheets** to renumber all selected sheets

Click **no renumbering** to skip renumbering sheets

Generate No. of/next

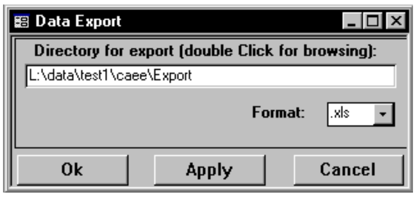
Click **Set only No of sheets** to set only the **No of Sh.** value

Click **No of / Next sheet** to set both attributes

Click **no setting** to skip setting for the **No of Sh.** and **Next sheet** attributes

3.7.2.24 Data Export Dialog

The Data Export dialog is used to define the parameters for the export of report data, i.e. the destination and the file format.



Directory for export (double Click for browsing): L:\data\test1\caee\Export

Format: .xls

Figure 3-108. Data Export Dialog

Dialog Controls

Directory for export
to specify the export directory (the project specific export directory is set as default). Double click the field to get the **File Selection** dialog.

Format
to specify the export format (the default value is `.xls`)

Ok
Click **Ok** to perform the export. The window is closed after the setting is done.

Apply
Click **Apply** to do settings. The window stays open.

Cancel
Click **Cancel** to exit the dialog without doing any setting.

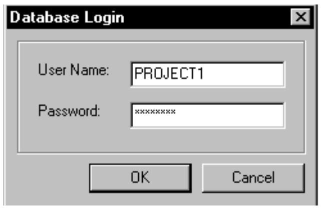
3.7.3 *el*Master Project Dialogs

NOTE

The detailed description of the *el*Master project Dialogs and menus is contained in the *el*Master project User’s Manual. This chapter only describes constraints when using this product integrated into the AdvaBuild Engineering Software

3.7.3.1 Login Dialog

To start *el*Master project you have to login to the database. Enter the name of your project in the fields User Name and Password of the Database Login Dialog



User Name: PROJECT1
Password: ********

Figure 3-109. elMaster project Database Login Dialog

3.7.3.2 File New Project

WARNING

This function must not be used as projects must be created from the Structure Builder menus.

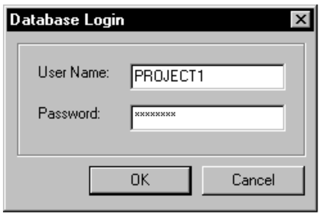
3.7.4 elMaster Project Administration Dialogs

NOTE

The detailed description of the *el*Master project administrator dialogs and menus is contained in the *el*Master project administrator User’s Manual. This chapter only describes constraints when using this product integrated into the AdvaBuild Engineering Software

3.7.4.1 Login Dialog

To start *el*Master project administrator you have to login to the database. Enter the name of your project in the fields User Name and Password of the Database Login Dialog



User Name: PROJECT1
Password: ********

Figure 3-110. elMaster project administrator Database Login Dialog

3.7.4.2 File | New User

WARNING

This function must not be used as users must be created from the Structure Builder menus.

3.7.4.3 File | Kill Project

WARNING

This function must not be used as projects must be created from the Structure Builder menus.

3.7.4.4 File | Change Password

WARNING

This function must not be used as passwords for users must be changed from the Structure Builder menus.

3.7.4.5 Edit | Delete User

WARNING

This function must not be used as users must be deleted from the Structure Builder menus.

3.7.4.6 Edit | Copy on Standard

WARNING

This function must not be used, because in the integrated version only one project can exist within one table space and therefore also only one standard named PROJECT is sensible.

3.7.5 elMaster Design Dialogs

NOTE

The detailed description of the *el*Master design dialogs and menus is contained in the *el*Master design User's Manual. This chapter only describes constraints when using this product integrated into the AdvaBuild Engineering Software

Chapter 4 Runtime Operation

4.1 Operating Overview

Not applicable here.

4.2 Runtime Tutorial

Not applicable here.

4.3 Operating Instructions

Not applicable here.

4.4 Runtime Operation Menus

Not applicable here.

Chapter 5 Maintenance

5.1 Error Messages

Electrical Diagram Builder may generate error messages that are displayed in the context of the Structure Builder user interface, if a problem has occurred. They will be displayed in an extra window. On top of the window the latest message is listed, while older ones are below.

Appendix A ODBC Data Sources

The following ODBC Data Sources are required for the Electrical Diagram Builder:

Data Source Name	Driver	Database	Description
ECAE	Oracle73 Ver. 2.5	SQL*Net Connect String: **tns:***ServerName***_ECAE**	Data source to connect the EDIB dialogs to the database
EDDE	INTERSOLV 3.00 Closed Driver	Server Name: **tns:***ServerName***_ECAE**	Data source to connect the *el*Master products to the database
SOS_BLOCKLIB	Microsoft Access Driver (*.mdb)	Database: *abtool1***\caee\***Version****\cadlib\bdb\blocklib.mdb*** e.g.: J:\CAEE\30r0\cadlib\bdb\blocklib.mdb	Data source to connect *el*Master design to the block database
EOSTB	Oracle73 Ver. 2.5	SQL*Net Connect String: **tns:***ServerName***_ECAE**	Data source to connect EDIB to the Structure Builder database

Table A-1. ODBC Data Sources for Electrical Diagram Builder

Appendix B EDIB System Variables in the Database

B.1 EDIB System Variables

The table below list the relevant system variables in the database required for the Electrical Diagram Builder:

Variable Name	Default Value	Description
EDIB_DB_VERSION	3.0/1	Internal Varaiable - Do not change
EDIB_FUNCDES_RULE	DOT	Designation rule for the function oriented reference designation
EDIB_LOCDES_RULE	DOT	Designation rule for the location oriented reference designation
EDIB_PRODDES_RULE	DOT	Configuration of the designation rule for the product oriented reference designation
EDIB_XDES_RULE	DOT	Configuration of the designation rule for the function oriented reference designation

Table B-1. System Variables in the Database for Electrical Diagram Builder

For a description of the other variables refer to Appendix B of the *el*Master project administrator User's Manual

B.2 Possible Values for the Designation Rule Variables

The following values can be defined for the Designation Rule variables:

Value	Description
NONE	Designations are not separated
DOT	Designations are separated with dots
PREFIX	Designations are separated with prefixes
PRE2DOT	Designations are prefix to dot separated

Table B-2. Designation Rule Variable Settings

Appendix C Glossary of Terms

Administration

All activities covering user registration and creation, renaming, backup and restore, and deletion of projects are summarized under the topic administration or project administration.

AdvaBuild_engineers

Name of a Windows NT group created for working with **AdvaBuild Engineering Software**. Via this group the access rights of users are controlled. All members of this group can access project data. Therefore it is necessary to be assigned to this group.

Creation and deletion of projects is also controlled via the **AdvaBuild_engineers** group. But in addition you need the administrator password for the database user **EOSTB**.

Aspect

There are often several ways to look at an Advant object, depending on how you want to handle it. When for example an Advant object is representing a valve, then you might be interested in a drawing of that valve or in its loop. Then you may create with a corresponding Builder an CAEE aspect for the drawing and a control function aspect for the loop. The aspect stores the corresponding data. An aspect is an instance of an aspect type. Normally a Builder supplies some aspect types it is able to work on. You can start a Builder on an aspect by opening one of its views.

Aspect Attribute

An attribute holds descriptive data of an aspect.

Aspect Registry

The aspect registry is the database of the Aspect Request Broker. All aspects of a project are registered there.

Aspect System

The Aspect Request Broker communicates with a Builder via a so-called Aspect System Interface. When some Builders share an aspect system interface, these Builders are referred to as an aspect system. Therefore, an aspect system may consist of one or several Builders.

Aspect Type

Each Builder supplies several aspect types. Examples of aspect types are basic property aspect, structure aspect, or node control software aspect. An aspect type is designed for special tasks. These tasks will be performed by the corresponding Builders or aspect systems. An aspect type works as a template for the creation of aspects.

Attributes

see Aspect Attributes

Basic Property Aspect Type

The basic property aspect type is one of the aspect types supplied by **Structure Builder**. It holds a name and the type of an Advant object. As an Advant object may have several names, it may have several basic property aspects. You can refer to a specific one with the help of its name category, for example with Customer ID.

An Advant object may have for example a customer ID "Turbine A" and a location ID "Turbine A 2nd floor".

Builder

A Builder is an application that can perform dedicated tasks on aspects. Builders can cooperate which each other via the **Aspect Request Broker**. Examples of Builders are: Structure Builder, Document Builder, Parameter Builder, Electrical Diagram Builder, Wiring Builder.

Category

A category is a subtype of an aspect type. The name category for example is a subtype of a basic property aspect.

Child Object

Advant objects can be visualized in a pool or in a structure window. In a structure Advant objects may have a parent-child relation. A parent object may contain several child objects. In this way you can create a hierarchy of Advant objects. Child objects can be hidden when you compress the parent object.

Cooperating Mode

Builders can work in cooperating or independent mode. In cooperating mode Builders can communicate via the **Aspect Request Broker**. They are started by the **Structure Builder**, when you open a view of a selected aspect.

Copy

You can copy Advant objects between projects, structures, or within structures. In each case copy creates an additional Advant object.

Database

The data of **Electrical Diagram Builder** is stored in an **Oracle** database. To be able to access these data, a user must be registered as a database user. The registration can be performed with the **Project | Administration** menu command in the **Structure Builder**.

Advant object

Advant object Technology offers a methodology to model real world objects with Advant objects, aspects, and views. All entities you work with during the engineering process, like main plant equipment, components and devices, information entities like signals, or location entities like areas are referred to as Advant objects. Each Advant object may have several aspects.

EOSTB

EOSTB is a special database user (database administrator) which has the access rights to create and delete projects and to change user passwords. For project administration you have to log into the system as EOSTB user.

Menu

Menus are part of the menu bar. When you click with the mouse on a menu bar entry, the menu will be displayed, which shows one or several menu commands or a submenu. If you click on a menu command, the command will be executed.

Menu Bar

The menu bar is a bar below the main window's title bar. It holds the menu entries.

Move

To change the location of an Advant object in one of your structures, you can move it to another location in the same or in another structure.

Name Category

A basic property aspect type is subtyped by name categories. An example of a name category is Customer ID.

Object

see Advant object

Object Name

The name of an Advant object.

Object Type

The type of an Advant object. When you create a new Advant object, you can select among several types.

Parent Object

Advant objects can be visualized in a pool or in a structure window. In a structure Advant objects may have a parent-child relation. A parent object may contain several child objects. In this way you can create a hierarchy of Advant objects.

Paste

You can insert Advant objects, that you have previously copied to the clipboard with the **Edit | Copy** menu command, at the currently selected object.

Place

You can place an Advant object somewhere in a structure. When you place an Advant object, you do not create a new object. The object gets a new structure aspect containing the information about the new structure position.

Prefix

The prefix determines the type of a reference designation. Some prefixes are standardized:

•	=	Function reference designation
•	-	Product reference designation
•	+	Mounting location reference designation
•	++	Topological location reference designation

Within AdvaBuild Engineering Software the following designation is used:

•	#	OCS item designation

Besides these predefined prefixes, you are free to use your own prefixes.

Further on, the prefix will be used to concatenate relative reference designations.

Project Administration

Project administration covers all activities to administer projects, to assign database users, and to assign users to projects.

Project Global Data Aspect Type

At project creation time a project global data aspect will be created as an aspect of the project object. You cannot delete this aspect nor create another one. The project global data aspect type stores general information about a project.

Reference Designation

A reference designation designates an Advant object in a structure unambiguously (not checked by the system) with respect to its parent objects. Absolute reference designations consists of a concatenation of all relative reference designations.

Selected Pool

A selected pool is a special pool that is the result of a filter. It is a subset of the pool.

SQL Statement

SQL statements are used to specify filters for Advant objects. They are stored in files which you can select.

Status Bar

The status bar is a bar at the bottom of the application's main window. It holds some status information like keyboard settings.

Structure

Advant objects can be related to each other hierarchically. These relations are visualized in a structure window. You can create several structures depending on your needs. Some predefined structures are available.

Structure Aspect Type

When you locate an Advant object in a structure, it will get an corresponding structure aspect, which will hold the information about the position within the structure and the object's parent object.

Substructure

The part of a structure that holds all child objects of a certain (parent) object. It is also referred to as subtree.

Toolbar

The toolbar is a bar locate directly below the menu bar. It offers a quick access to some of the most commonly used menu commands.

User

A member of a project must be known by the database as user. Members of the Windows NT group **AdvaBuild_engineers** can be assigned as database users and can be mapped to projects.

View

An aspect may have several views. You can start a Builder on an aspect by opening one of its views. A node control software aspect as among others for example a node function chart and a node structure function chart view.

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